

★ MODEL AIRPLANE NEWS

APRIL 1947 • 25 CENTS

An AIR AGE Publication



GIVE!

BYLAM Masterplans of the **SOPWITH DOLPHIN**

LOOK FOR THIS COLOR CARD AT YOUR DEALER'S...



TESTORS

**MODEL
AIRPLANE
DOPE**

- OFFICIAL ARMY-NAVY AIRCRAFT
OLIVE DRAB
- OFFICIAL ARMY-NAVY AIRCRAFT
ENGINE GRAY
- OFFICIAL ARMY-NAVY AIRCRAFT
MAROON
- OFFICIAL ARMY-NAVY AIRCRAFT
INSIGNIA BLUE
- OFFICIAL ARMY-NAVY AIRCRAFT
GLOSS BLACK
- OFFICIAL ARMY-NAVY AIRCRAFT
TRUE BLUE

TESTORS
A BETTER FINISH
FOR YOUR MODEL

FREE!
Take one

- OFFICIAL ARMY-NAVY AIRCRAFT
AIRCRAFT CREAM
- OFFICIAL ARMY-NAVY AIRCRAFT
LEMON YELLOW
- OFFICIAL ARMY-NAVY AIRCRAFT
ORANGE YELLOW
- OFFICIAL ARMY-NAVY AIRCRAFT
SKY BLUE
- OFFICIAL ARMY-NAVY AIRCRAFT
AIRCRAFT GRAY
- OFFICIAL ARMY-NAVY AIRCRAFT
BATTLESHIP GRAY
- OFFICIAL ARMY-NAVY AIRCRAFT
SILVER
- OFFICIAL ARMY-NAVY AIRCRAFT
INTERNATIONAL ORANGE
- OFFICIAL ARMY-NAVY AIRCRAFT
INSIGNIA RED
- OFFICIAL ARMY-NAVY AIRCRAFT
WILLOW GREEN
- OFFICIAL ARMY-NAVY AIRCRAFT
MEDIUM GREEN
- OFFICIAL ARMY-NAVY AIRCRAFT
INSIGNIA WHITE

**ONE COAT
COVERS!**

Now! Look for this new, easy-to-study color card that gives you an over-all view of the complete line of Testor's Model Airplane Dope. You will find it another friendly model-building help from the makers of America's largest-selling line of

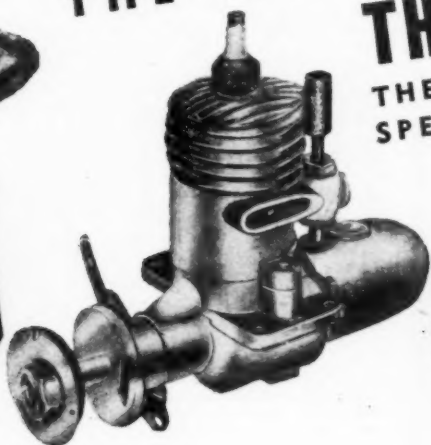
finishing materials and cement. Remember: Testor's Dopes have no equal for one-coat coverage... smooth, lustrous, high-gloss surface... pure color brilliance. Available in 20 colors, clear and thinner. At Dealers everywhere!

TESTOR CHEMICAL COMPANY • ROCKFORD, ILLINOIS



THE MIGHTY, NEW THOR "B"

THE ENGINE THAT
SPELLS P-O-W-E-R



FACTORY TESTED
READY TO RUN

ONLY \$**995**

Complete with coil,
condenser and fully
illustrated instructions.

in KIT form
Fully machined, 5 minutes
to assemble -

ONLY \$**695**

Without coil and condenser
WITH FULL INSTRUCTIONS

THOR—The Engine
that won't be beat
in any price field.
The Ideal Engine
for all models,
planes, boats and
race cars!

Just a "twist of the wrist,"
and she's off—smooth, vel-
veted power. Never lets
you down!

→ This is your en-
gine—powerful,
smooth, stream-
lined. Featuring the new-
est technical develop-
ments in the model engine
field. Just a "twist of the
wrist" and the Thor starts
with a roar. It's as simple
as all that!

30 DAY GUARANTEE

of Satisfaction
Or Your Money Back!
No other motor DARES
give you this guarantee

FLASH!

THE NEW THOR "B" IS IN THE MONEY!

Three "firsts" in U.S. and Canadian contests.

OVER 20,000 THORS

have been sold in the last year

SPECIFICATIONS

H.P.: 1/6	Displacement: 29
Bore: 13/16	R.P.M.: 300-11,000
Stroke: 9/16	Weight: 4 1/2 oz.

Class B, NAA RULES

Dealers: If your jobber does not have
THOR in stock, order direct,
giving jobber's name

IMMEDIATE DELIVERIES

Only our large volume and tremendous production make it
possible to give you so much value for so little.

AMERICA'S HOBBY CENTER, INC.

(Thor Engines Division) Dept. M47T
156 West 22nd Street, New York 11, New York

The Thor Gives You Everything You Want in Your Engine A REAL POWER PLANT!

- Ideal for free-flight and U-Control planes, boats and midget cars.
- Complete fully illustrated instruction manual.
- Full 30 day guarantee against defective parts.
- Every part precision engineered to perfection.
- Lowest weight of all "B" engines without sacrifice of power.
- Streamlined for cooler operation and longer life.
- Automatic "dual" carburetor for quick "break-in."
- Easy to start, "a twist of the wrist." High compression ratio for instant starting. New PRESTO disc starter eliminates prop "flipping."
- Steady and consistent running.
- New intake design for non-flooding and positive adjustment.
- "STEEL-IZED" piston, cylinder and bearing surfaces micro-precision fitted to .0001". Seize and wear proof. Special oil grooves for longer life.
- Extra long crankshaft of polished-ground steel, scientifically balanced. 1" bearing surface with forced double lubrication for longer wear.
- Perma-designed foolproof Beryllium "FLOATING" timer—never needs adjustment—can't slip in operation. Positive automatic spring action.
- Castings made of new "THOR" alloy. With more heat dissipation and wearing quality than any other engine.
- Uniflow piston.
- Integral all-metal tank.
- Invertible and runs in either direction.
- Replacement parts available and interchangeable.

POWER, DEPENDABILITY, LOW COST
"EASY TO START"—"EASY TO RUN"

SEND ONLY \$1

We Will Ship Your Engine Col-
lect C.O.D. the Same Day; or
Send Full Price Plus 25c Extra
and We Ship Parcel Post Insu-
red.

Send self-addressed,
stamped envelope for
FREE illustrated booklet

Serving Aviation 18 Years

MODEL AIRPLANE NEWS

JAY P. CLEVELAND
Publisher

APRIL 1947

VOL. XXXVI No. 4

CONTENTS

Cover Design by Jo Kotula

FREE FLIGHT GAS	
The Ghoul	17
FLYING SCALE RUBBER	
Flyabout	23
G-LINE GAS	
Pole Cat	34
WYLAM MASTERPLANS	
Sopwith Dolphin	32
PLANE ON THE COVER	
Columbia XJL-1	26
SCIENCE	
Retracting Single Leg Undercarriage	6
Speed Cows	20
Finish First	21
Design Forum	22
Simplex 25 (Part 2)	28
Latest Model Motors	39
Mounting High Pitch Props	41
WORLD WAR I	
Sopwith Dolphin	38
3 VIEWS	
Columbia XJL-1	27
Vickers Vampire Pusher (1917)	42
Armstrong-Whitworth Armadillo (1918)	42
Avro Spider (1919)	42
NEWS	
Flash	2
Model Airplane Newsletter	8
West Coast Tips	12
Airways	30
Club News	61

HOWARD G. MCENTEE..... Editor
JOSEPH M. MANN..... Managing Editor
WILLIAM A. WYLAM..... Associate Editor
WITTICH HOLLOWAY..... Art Director
JAY P. CLEVELAND..... Advertising Manager
A. M. HOFFMAN..... Asst. Adv. Manager
ELY O. MERCHANT..... Adv. Field Manager

Published monthly by Air Age, Inc., Mount Morris, Illinois. Editorial and Advertising offices: 551 Fifth Ave., New York 17, N.Y. Jay P. Cleveland, President and Treasurer; A. M. Hoffman, Sec'y. Entered as second class matter Dec. 5, 1934 at the post office at Mount Morris, Ill. under the act of March 3, 1879. Additional entry at New York, N.Y. Price 25c per copy. Subscriptions \$2.50 per year in the United States and possessions; also Canada, Cuba, Mexico, Panama and South America. All other countries \$3.00.

Copyright 1947 by Air Age, Inc.



THE NAVY has revealed the second supersonic research airplane, Douglas D-558 *Skystreak*, which joins the Bell XS-1 in the attack on the sonic speed barrier. The *Skystreak*, however, is totally different from the XS-1 although designed to produce essentially the same information. The new speedster is powered by a General Electric TG-180 turbojet engine which enables the plane to take off under its own power. Basic idea of the *Skystreak* is to test the value of low aspect ratio wings as a means of minimizing the effects of the transonic zone. The XS-1 was designed primarily to test the usefulness of very thin wings. "Another airplane", believed to be the Bell XS-2, will test sweepback wings in the transonic zone. The *Skystreak* is of magnesium construction. The nose assembly, carrying the pilot, may be detached in mid-air permitting the pilot to slow down and escape by parachute in event of difficulty. The new plane, like the XS-1, is scheduled to be turned over to the National Advisory Committee for Aeronautics for the research work for which it was built following routine acceptance tests. It will be delivered this spring to Muroc Army Air Base where the first test flight will be made. About six different sonic research airplanes are being built for NACA, which is taking the world lead in the

attack on the sonic barrier, which many believe to be the most critical problem now facing aviation.

MORE DETAILS are available on the two Curtiss jet projects. The XA-43 is a single seat attack version powered by four General Electric TG-180 turbojet units mounted in pairs in flat, rectangular nacelles in each wing. It is equipped with slots and flaps. Armament includes a 37 mm cannon and ten .50 caliber machine guns. A similar version is the XP-57, which is powered by two turbojet units and will mount special equipment for "all weather" operations.

FIRST TEST flight of Northrop *Pioneer* tri-motor transport plane has been completed successfully and photographs reveal the "antique" design as smart and modern in appearance. Max Stanley, who flew the monster XB-35, was the test pilot and he "took it easy" on the first flight using 1000 ft., although the design is capable of taking off in 700 ft. Another reason is the fact that three Pratt & Whitney Wasp engines of 600 hp are installed at present instead of the 800 hp Wright Cyclone engines which will eventually be used. The *Pioneer* was built specifically for Latin American export trade where small field capabilities are at a premium. Northrop plans to test the airplane thor-

(Turn to page 6)



(Above) Douglas Cloudster, deluxe private or executive ship, has two 250 hp engines driving single tail prop. (Below) Sleek new 4 jet bomber Consolidated Vultee XB-46 has span of 106 ft.



Be Sure to Build
All of These
Sensational

"IT" Models—Each 30"

Except DC-3 which is 36"

Each Kit only **\$1.00**



LOCKHEED P-80
SHOOTING STAR



CULVER "V"



LUSCOMBE
SILVAIRE



GLOBE
SWIFT



STINSON
"150"
VOYAGER



CURTISS P-40 "WARHAWK"



GRUMMAN
HELLCAT
F6F



BELL AIRACOBRA P-39



DOUGLAS DC-3
(C-47 & C-53)



POPULAR ERCOUBE KIT

FIRST* with a model of America's FIRST ALL-JET AIRPLANE to Take Off and Land on an Aircraft Carrier



*There's Always
Something New in
Cleveland Models

Sleek 30" replica of the Navy's first "500 m.p.h." plane McDONNELL PHANTOM

THIS plane's design incorporates many radical new features, which make it a very interesting model to build. The long sharp nose, gracefully formed fuselage, and towering tail of the prototype make it the most distinctive design in the air today. Taking off in only 360 feet, the Phantom lands on deck and handles at low landing speeds as well as most present propeller flown naval aircraft. In the air, it possesses superior speed (over 500 m.p.h.) and phenomenal range for a jet powered plane. Full complement of Phantoms will soon be carried by U.S. Navy Carriers. The Cleveland-Designed model can be flown as a speedy glider, launched by towline, or flown by swing control. Dry Kit..... **\$1.00**

**Gas Model Time Will
Soon Be Here. Be Ready!**



STINSON RELIANT

Last word in radio control job. Many prefabricated parts. 82 1/2" span. Dry Kit—no power unit **\$15.00**

ALSO: Playboy Sr. \$4.50, Playboy Jr. \$2.50, Baby Playboy \$1.00, DeLuxe Sharpie \$2.00. All dry Kits, no power units.

WHEN YOU ORDER: See your local hobby dealer first! If you are then unable to get C-D's do not accept substitute makes but order direct and include 20c for packing-postage. Minimum order \$1.00. No C.O.D.'s. Special Delivery, 25c extra (U.S. only). Ohio residents: add 3% Sales Tax. Add 10% for necessary handling and postage charges as usual when stationed outside continental U.S. Add 10% for U.S. Possessions, Canada and Mexico. All other countries 20%.

DEALERS: Double your Cleveland business by having a complete stock—and using our merchandising sales material. Order Kits from your jobber—write us direct on your letterhead for "no cost" sales help.

CLEVELAND MODEL & SUPPLY CO.

World's Largest Manufacturers of Quality Model Aircraft Lines—Since 1919

4513DI Lorain Ave., Cleveland 2, Ohio, U.S.A.

Get These Popular New MFM* KITS

*Master Flying Model Kits are absolutely complete



28" Republic SEABEE \$3.00



70 3/4" Douglas DC-3 \$14.50

Many other MFM Kits of famous Army, Navy and Commercial Planes, priced from \$3.00 to \$14.50

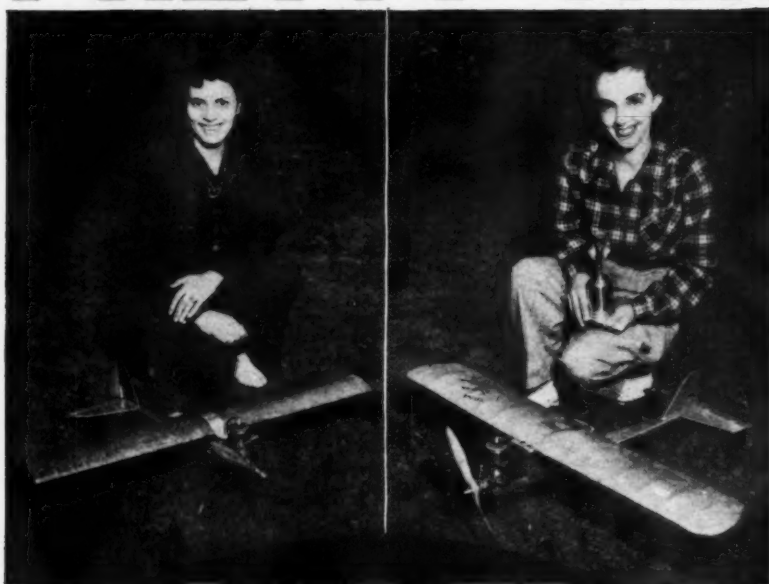


25" Tether STREAMLINER \$4.00

**SEND FOR
FREE
JUMBO FOLDER**

or pick one up at your dealer. Lists complete line of C-D kits.

PRETTY WINNERS



YOUNG WOMEN ALSO BUILD, FLY AND WIN WITH SUPER-CYCLONE POWERED PLANES

Helen Weatherhead and Beverly Cosens are top-notch women pilots in Southern California's Flying Gremlin Club. So far they have topped its membership of men, women and boys in all types of flying.

Miss Beverly Cosens is shown holding the rotating trophy which she has won twice in succession, and hopes for a third win and its permanent possession. She calls her winning Super-Cyclone powered plane—"Miss Super-Satan."

Mrs. Helen Weatherhead calls her Super-Cyclone powered plane the "Button Nose." Both have built and fly their own planes. Incidentally, Miss Cosens' father is also an enthusiastic model fan and they form the only father and daughter team we know of to date. He also uses Super-Cyclone engines.

SUPER-CYCLONE

**BUY SUPER-CYCLONE ENGINES
FROM YOUR LOCAL DEALER**

FACTORY GUARANTEED

EASIEST TO START... SUPER-CYCLONE is the only model engine equipped with the original Super-Cyclone needle valve; accept no substitute. Precision built and dependable, with winning performance; thousands of these engines have run thousands of gruelling hours—SUPER-CYCLONE has been SUPER-TESTED.

LOOK TO THE LEADER FOR LEADERSHIP

DEALERS....Write for Literature and Catalogue

SUPER CYCLONE, Inc.

GRAND CENTRAL AIR TERMINAL

P. O. BOX 1351

GLENDALE 5, CALIFORNIA



SUPER-CYCLONE
G R Series
Single
Ignition
Airplane
Engine
\$22.65

SUPER-CYCLONE—the biggest name in little engines...

AVIATION CAREER

MAXIMUM TRAINING IN MINIMUM TIME

"CAL-AERO"

Career training... will add dollars to your pay check all the rest of your life.

The Specialized Aeronautical Engineering and Master Aviation Mechanic courses offered by Cal-Aero Technical Institute, are complete, and upon graduation you are fully qualified to enter the employ of an aircraft manufacturer or airline.

Cal-Aero leadership training is just what you need. It is carefully designed to make more money for you and make your future secure. The courses are U. S. Government C. A. A. approved, concentrated and intensive with all non-essentials eliminated, to train you in the shortest period of time, for the best position possible. The subjects you study are the very things you do on the job. They are approved by the Aviation Industry,

VETERANS: Cal-Aero is approved for the G. I. Bill of Rights. Hundreds of ex-service men are here, now, taking advantage of these educational benefits. Write us—we will be happy to help you with your future plans.

the very men who employ you and know today's requirements.

Established in 1929, Cal-Aero Technical Institute is one of the oldest, largest and most distinguished aeronautical schools in the United States. It can provide you a foundation for a profitable occupation and secure future. Over 6000 successful civilian graduates prove that Cal-Aero Tech training can get results for you and increase your pay check.

WE HAVE THE EXPERIENCE—THERE IS NO SUBSTITUTE FOR IT!

We invite your consideration, investigation and comparison. The handy coupon will bring you full information and details, use it.



TRAIN IN SUNNY SOUTHERN CALIFORNIA

CAL-AERO TECHNICAL INSTITUTE

FORMERLY CURTISS-WRIGHT TECHNICAL INSTITUTE

**GRAND CENTRAL AIR TERMINAL
1229 AIRWAY—GLENDALE 1, CALIFORNIA
(LOS ANGELES COUNTY)**

UNDER PERSONAL SUPERVISION OF MAJOR C. C. MOSELEY, PRESIDENT AND FOUNDER SINCE 1929...ON OUR OWN HUGE AIRPORT—IN HEART OF THE AIRCRAFT INDUSTRY

**BE WISE...PROTECT YOUR FUTURE
MAIL TODAY · DON'T DELAY**

SEND FULL INFORMATION AND CATALOGUE FREE ON COURSE CHECKED BELOW

- ☐ AERONAUTICAL ENGINEERING COURSE
- ☐ MASTER AVIATION MECHANIC COURSE
- ☐ SPECIALIZED ENGINE COURSE
- ☐ SPECIALIZED AIRPLANE COURSE
- ☐ POST GRADUATE AERONAUTICAL ENGINEERING COURSE
- ☐ SPECIALIZED AIRCRAFT SHEET METAL COURSE
- ☐ AERONAUTICAL DRAFTING COURSE, HOME STUDY
- ☐ AIRCRAFT BLUE PRINT READING COURSE, HOME STUDY

NAME

ADDRESS

CITY ZONE STATE

DATE OF BIRTH N-4



FLICKER

CONTROL
MODEL

\$3.95

KIT T9



SUITABLE FOR
class II, III and IV
("A", "B" and
small "C")

COMET'S great NEW CONTROL MODEL, "the FLICKER" is outstanding for its "easy-to-build" features. Its sturdy construction resists shock, its design makes it easy to handle and easy to fly—the upper shell snaps off for easy access to ignition. Among other features, the FLICKER kit contains shaped balsa fuselage parts, wings and stabilizer; tapered hardwood motor bearers; plastic transparent bubble canopy; formed landing gear, etc.

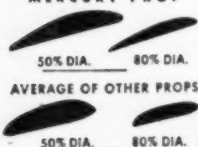
See this great new model at your dealer NOW!

"IT'S QUICKER, IT'S SLICKER,
IT'S FLICKER by COMET."

**Mercury
GAS
PROPS**

"...the efficiency of any propeller depends largely upon its cross-section... The sections below show the comparison between our prop and a section of an average of other leading brands.

MERCURY PROP



For efficient airfoil sections and wide "Hi-Reynolds No." tips, buy Mercury Gas Props.

Priced at 35c 40c and 45c



COMET

MODEL AIRPLANE & SUPPLY CO., Inc.
128 West 27th St. • Chicago 18, Illinois
1188 Broadway • New York City 1, New York

(Continued from page 2)

oughly around local Southern California fields, particularly the small rough ones (of which there are plenty!), after which an extended sales tour of Central and South America will be made.

THE FIRST jet-propelled flyingboat in England, the Saunders-Roe SR/A1, is nearing completion. The craft is a single-seat Navy fighter craft powered by two Metropolitan-Vickers F2/4 axial flow turbojet units mounted at the wing-hull junctures. Air is provided through a single inlet in the extreme nose. The small craft has a wingspan of 46 ft. and is 50 ft. long. It is hoped that success of this design will reinstate the much-maligned flyingboat in the aircraft picture. The use of turbojets insures its qualification in the 500 mph class with other fighter planes. The British point out the advantages of the turbojet flyingboat in South Pacific operations, for example, where use of land-based fighters required extensive landing facilities laboriously installed.

EMERGENCE OF France from its wartime aeronautical "tomb" to a prolific source of new aircraft designs was made clear at the Paris Aero Show. It was obvious from the more than 30 new designs on display that the state-controlled industry has no intentions of being dominated into set patterns or that research

will lag. Included were four supersonic research airplanes, all with sweepback wings and jet power: the Aerocentre N.C.271 (two Rolls-Royce Nenes), the Aerosudouest SO M1 (Rolls-Royce Derwent), the Arsenal VG 70 (Junkers Jumo 004) and the S.N.C.A.S.E. SE 2400 (two Rolls-Royce Nenes).

MORE DETAILS and photographs are now available on the long-rumored Curtiss XF15C-1 single seat Navy fighter plane. It is a combination reciprocating-jet engined design with propeller located in the nose and the jet engine in the lower fuselage underneath the tail. The reciprocating engine is a Pratt & Whitney Double Wasp R-2800 driving a four bladed propeller enclosed in a large spinner. The turbojet unit is a Halford H-1B unit of British design manufactured by Allis-Chalmers. A distinctive feature of the XF15C-1 is the location of the horizontal tail surfaces (believe it or not!) on top of the fin. A tricycle landing gear is used with the nose gear folding rearward and the main gear folding inboard into the wing centersection. The pilot is located in a bubble canopy. Three of the unorthodox fighters have been built for the Navy for experimental purposes and no plans for production have been announced.

THE LONG-AWAITED Ryan Super Fireball has been revealed as a standard FR-1 fighter with a turboprop unit mounted (Turn to page 84)

RETRACTING SINGLE LEG UNDERCARRIAGE

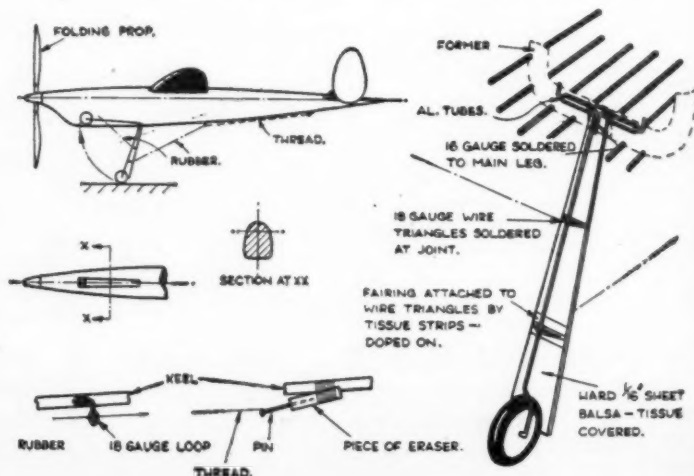
By Bill Dean

MOST retractable undercarriages rely on the rubber motor to operate them. This is rather complicated in action and usually calls for much constructional ingenuity. In the diagram, a "peg-leg" type is shown which operates quite independently from the motive power. It works like this—always!

The single leg is held down by a piece of rubber and thread stretched backwards to the tail, where it is anchored by a pin pushed into a piece of india rubber. The backward movement is limited by the upper part of the undercarriage bearing against one of the formers. Another strip of rubber (weaker than the first) is also tied to the leg and stretched up to any convenient point inside the fuselage (found by experiment). The model is

placed in this condition on the ground and takes off in the usual manner. All the time the pin at the tail is gradually being pulled out of the india rubber by the rear rubberband. Finally it comes free and the leg is pulled forward and up into the fuselage by the front band. Meanwhile the pin on the end of the piece of thread is brought to a stop when it reaches a small wire loop set midway up the fuselage. When retracted the hole in the fuselage is covered by a door fitted to the undercarriage leg. The only external mechanism left is that of the rubberband and thread.

Credit for thinking of using a piece of india rubber to delay the operation goes to R. H. Warring—although the layout illustrated here is quite original.



DE LONG WINS AGAIN

at Miami Meet

1st in Open Control Line Class "B"

1st in Senior Control Line Class "B"

1st in Junior Control Line Class "B"

At the first major tournament this year at Miami, it was DeLong "30" again—and all the way. Yes, DeLong "30" engines powered the winners in each division in Class "B"—open, senior and junior. If you want to own the engine that winners use—get a DeLong!

DE LONG
WINS AGAIN
AND AGAIN
AND AGAIN



Easy to start

Full of power and speed

For free flight or control line

Designed for "hot" fuels

Guaranteed, dependable



\$19.50

That's the engine the winners use. See the DeLong "30" at your dealers today.

SUPER MOTORS, Inc. • CLEVELAND, OHIO

YOU WILL WANT TO FLY IN THE A. S. M. A. E. INTERNATIONAL AIR CLASSIC

**AN INTERNATIONAL RUBBER POWERED COMPETITION
FOR MODEL BUILDERS THROUGHOUT THE WORLD**

TO BE HELD IN THE U.S.A. IN AUGUST 1947

To The Champion—An Originally Designed 4-Foot Gold Trophy—Prizes to 50th Place. (Extra—To the Champion—A Special Benrus "Sky Chief" Chronograph Suitably Engraved)

International Rotary, V.F.W., American Legion Posts, Kiwanis, Elks, Chambers of Commerce, etc., are urged to contact National Headquarters of the American Society of Model Aero Engineers for full information on how your local group can be personally represented in this bid for better international relations.

Start building NOW for this important meet. Your own design or a manufactured kit may be used or if you prefer specially designed plans are available through International Headquarters or at your local dealers.

The A.S.M.A.E. is a recognized authority on all phases of model flying, sanctions and conducts contests for: gasoline powered models, rubber powered models, gliders, radio control and in experimental research.

U.S. residents remit 6c in stamps for rules and literature. Foreign applicants remit 20c U.S.A. currency. Dealers, be prepared to meet the inquiries of your customers. Write for information—now.

Watch Our Next Month's Ad For Our Air-Mark

**AMERICAN SOCIETY OF MODEL AERO ENGINEERS
ORITANI THEATER BLDG., HACKENSACK, NEW JERSEY, U.S.A.**

Enclosed find _____ in stamps or coins for full particulars regarding the A.S.M.A.E. International Air Classic.

NAME _____

ADDRESS _____

LOCAL DEALER'S NAME AND ADDRESS _____

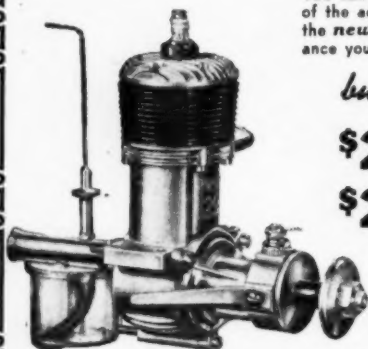
CLUB AFFILIATION IF ANY _____

AGE _____

Look ahead,-- look at the new FORSTER "29"

Progress is ever on the march, with giant aircraft engines and little aircraft engines as well! For simple proof look at the new FORSTER "29", over $\frac{1}{2}$ horsepower in an engine of .299 displacement! Such performance and speed was unheard of not long ago but today it is yours in this great little power plant. Don't let imitators deceive you. Be sure you are getting the **GENUINE** FORSTER "29" with ball bearing crankshaft and high compression cylinder head.

You can't stop progress but you can avail yourself of the advantages it offers! Power your plane with the new FORSTER "29" for that extra performance you will need to put you in the lead.



buy it at your dealer

\$24⁷⁵ WITH SPARK COIL
AND CONDENSER

\$23²⁵ WITHOUT COIL
OR CONDENSER

Write for descriptive literature

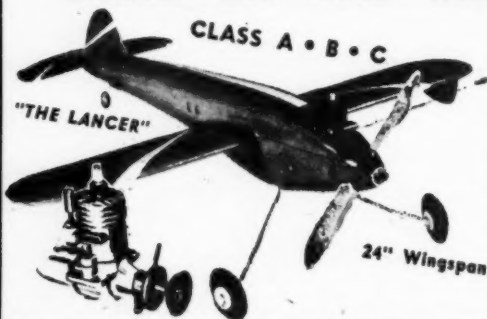
DEALERS: Write Us Today
Regarding Delivery

FORSTER BROTHERS

3539 N. Kenton Ave.,

Chicago 41, Ill.

COMPLETE LINE CONTROL OUTFIT MOTOR—KIT—COIL—WHEELS—Etc.



COMPLETE
\$12⁰⁰

- Lancer Gas Model Kit
- New Thor Motor
- Coil and Condenser
- Gas Propeller
- Control Handle
- Sullivan Control Wire
- Rubber Gas Wheels

New type construction. No formers or struts. Just 4 solid balsa planks for body and wings. All parts printed or semi-cut. Build in a few hours. A constant flying ship. Complete with full-size plans, rubber wheels, control handle, cement, dope, etc., for \$3.95 P.P. . . . OR complete with our combo special. \$12.00 P.P.

• FREE WITH GAS MOTORS •

10 Big Items Free with every motor ordered

1. Coil & Cond.
2. 3Ps. Wrench Set
3. Postage & Insurance
4. Coil ignition wire
5. Mounting bolts
6. Book on engine repair
7. Hi Tension lead
8. Soldering lugs
9. Ident. tags for plane
10. Complete catalog

Arden .099 P.B.	\$16.50	Merlin .232	18.00	Cannon-C	21.50	McCoy	35.00
Arden .099 B.B.	19.50	De Long 30	19.50	Ohlsson 60	18.50	McCoy 49	23.00
Arden .199 B.B.	21.50	Cannon 300	19.75	Rocket 46	22.50	Madwell 49	18.00
Atom .099	15.50	Bullet .275	15.00	Vivell 35	18.00	OK 50	18.00
Bantam .199	18.50	Thor 30	9.95	Vivell 49	20.00	OK 50	18.00
Perky-A	18.00	Rogers 29	15.75	Ken 610	32.50	OK Twin	49.00
Thor-B Kit	6.95	Rogers Ram 30	9.95	Denny 57	20.00	OK Raceway &	
Ohlsson 19	14.50	Pierce 29	12.95	Champion 624	23.50	Marine	23.00
Ohlsson 23	16.50	Super Melcraft 29	18.50	Pacemaker .59	24.95	Super Cyclone S.I.	22.65
OK 29	15.50	Torpedo 29	18.50	Hornet	35.00	JETS: Minijet	35.00

ORDER TODAY—IMMEDIATE DELIVERY

MERCURY MODEL AIRPLANE CO.

1592 N.3 LINCOLN PLACE

BROOKLYN 33, N. Y.

BOYS—Send 3c
stamp for catalog
DEALERS WRITE!

Model Airplane NEWSLETTER

by AL LEWIS

THE age-old question of pylons versus conventional appearing free flight gas models is being raised again as the new contest season approaches and more modelers tune up their engines and trim up their planes.

Latest exponent of the "prototype" free flight gassie to step forward and declare himself in no uncertain terms is the well-known model builder and flyer, Jack Luck of Montreal. Mr. Luck is well known to MODEL AIRPLANE NEWS readers as the designer of some outstanding craft. He is an industrial designer by profession and an individual to be reckoned with when it comes to reasons why models do or do not perform and just what makes a model behave.

This Canadian expert comes out flatfootedly and says the current regulations are downright unworkable and even dangerous. With the advent of the more powerful post-war engines, designer Luck contends that wing and power loadings should be raised—and immediately!

It is a fact that a number of discerning activity leaders and well known designers have been thinking along the same lines. Although the actual thinking of the A.M.A. contest board is not known at the time this is written, it is a matter of record that some members have been advocating a stepped-up requirement for the larger size models. Proponents of increases mention 80, 90, and 100 ounces per cubic inch for Class A, B, and C power loadings respectively, and 7, 8 and 9 ounces per 100 square inches of wing loading.

The Northwest gas clubs are already flying with 120 oz. per cu. in., but reports indicate that models still continue to go out of sight. It's a lot like the weather—everybody talks about the subject but nobody ever runs comparative contests.

But back to Jack Luck and his idea that what this country and Canada need are more realistic-looking models. Of course, in this age of supersonic experimentation it is somewhat difficult to predict what next year's aircraft will look like, so maybe there are arguments against conventionality, too. However, it must be conceded that a lot of model aeronauts are turning to scale model craft flown on control line so obviously the trend is in that direction. Frankly, we can think of nothing finer than to see a slick scale model take off, circle around the "pilot" and go into a series of stunt maneuvers. That's what we call real modeling. And if the other fellows want to continue with free flight—why, let them set the wing up off the fuselage on a step ladder if they so desire.

Of course when Jack mentions the safety angle he gets our attention, because a number of folks have been plugging safe flying

(Turn to page 10)

CORRECTION!

In our advertisement appearing on Page 82, March issue, "Free Gas with Motors" was listed. This should have read "Free with Gas Motors" since we offer 10 big items free with every motor order. We regret any inconvenience this may have caused our customers.

MERCURY MODEL AIRPLANE CO.

1592 Lincoln Pl., Brooklyn 33, N. Y.

CANADIANS

**FOR CANADA'S
BEST BUYS IN MO-
TORS - KITS - SUP-
PLIES - SEND FOR
OUR FREE CATALOG**

KEENIE Gas Props .30 KEENIE Coil \$2.50
LLOYD'S KNIVES—BLADES—CHESTS

A LARGE SELECTION OF MOTORS
INCLUDING ARDEN, BANTAM,
MADEWELL 49, PIERCE, OHLSSON,
HORNET, McCOY, DELONG AND
MANY OTHERS.

DEALERS—JOBBER

Next Month's Advertising will fea-
ture a New Canadian Control Line Kit
—The WINDSOR TORNADO. Be pre-
pared for the big demand for this kit
and **WRITE FOR DETAILS NOW!**

ONTARIO MODELERS—

Major Contests are scheduled for the
coming season in this area. Get your
name on the mailing list for special
bulletins.

WINDSOR MODEL AIRCRAFT

545 Josephine Ave. Windsor, Ont.

MODELERS!

**MODEL AIRPLANES
BOATS—MOTORS
SUPPLIES**

**All Orders Over \$2
Shipped Post Paid. We
Also Ship Collect C.O.D.**

**Send for Our FREE Catalog Today!
Please State Airplanes or Boats**

OAKRIDGE SALES CO.

515 VAN ST., ELGIN, ILL.

CANADIANS

Send stamp for our '47 price list.

NEW LOW PRICES

e.g. ARDEN .099 only \$19.95

We carry a complete line of all hobby
craft kits and tools.

Everything in U control accessories and
kits and all leading gas engines.

Wholesale and retail

ST. JOHN MODEL SHOP

646 Portage Ave., Dept. A
Winnipeg, Man.

"The West's Leading Hobby Shop"

WESTERN DEALERS

FAST * WHOLESALE * SERVICE

Leading Lines of Modelmakers' Supplies, Including

ATWOOD, AIR-O, AERO-SPARK, AIR AGE BOOKS, AIR-AUTO-MARINE, AIR-
FLO, ALL-STAR, ARISTOCRAFT, AMECO, AMERICAN JR., AUSTIN-CRAFT,
BEACON, BANTAM, AEROGLOSS, CONSOLIDATED, CANNON, CHUPP, C & R,
DELONG, DAVIES, DOOLING, CONTESTOR, CADET, CAPITOL, CHAMPION
PLUGS, EAGLE, EDCO, E-V, FALCON, FLO-TORQUE, FROOM, GIRARD, HORNET,
HERKIMER, HECO, HURRICANE, JASCO, McCOY, MELCRAFT, MEGOW, MON-
ARCH, POWER-PLUS, RAY, MINIJET, SCIENTIFIC, SNAFU, SULLIVAN, TESTOR,
TOPPING, TORPEDO, VIVELL, X-ACTO AND MANY OTHERS

Send for Large Wholesale Lists

"HOBBYCRAFTS"

DISTRIBUTORS

1327 J ST.

SACRAMENTO 14, CALIF.

COMPLETE! Just Gas Up—Ready to Fly

Class
"B" or "C"



48" WINGSPAN
14" PROP
BODY—CRUTCH CON.
WING & TAIL—SILK
SPAN COVERED

AT LAST!

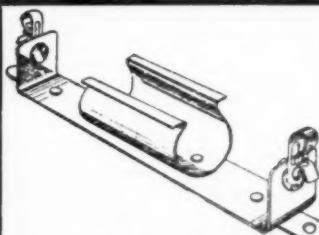
Here is a complete ready built
plane, the famous P-48 combining all 3
points: Beauty, Strength and Flying Ability.
We believe this to be the strongest flying
model ever built for its size.
Completely assembled with a beautiful
paint job. Includes a Cannon engine, coil,
condenser, switch, battery pack, wiring, rub-
ber wheels, control lines.
You may get this plane in either O. D. or
Black, also with or without engine.
With motor \$56.00
Less motor 36.00

This plane is made by expert modelers.
We do not accept C.O.D. orders.

HESS BROS.,

BOX 104,

PURDY, MISSOURI



BE MODERN! USE A HOL-TITE

Help balance your plane with our "in-line"
battery case which distributes weight evenly
over the center of gravity.

PENLITE, MEDIUM, LARGE.....50c

PLUS .10 BY MAIL

WATCH OUR FUTURE ADS FOR
NEW ACME-MADE PRODUCTS

SEE YOUR DEALER FIRST.
IF HE CANNOT SUPPLY
YOU, ORDER DIRECT

ACME MODEL ENGINEERING CO.
326 7th Avenue Brooklyn 15, N. Y.

FUELS

**"POWER MIST"
"SPITFIRE"
"BLUE BLAZER"**

The original miniature engine
fuels.

Chemically treated castor oils
and alcohols.

16 years of continuous testing

"No gas and petroleum oil
mixes."

Supercharged and fortified
castor oils.

61 official world records.

Demanded by professional
racers.

FUEL FACTS AND FORMULAS: How to determine the correct
fuel. Full information and literature—at your dealer, or send stamped addressed envelope.

FRANCISCO LABORATORIES

3787 Griffith View Drive • Los Angeles 26, California

GMCO NOTES

VOLUME 2 NO. 5

APRIL 1947

GAS ENGINES FREE PROP. WITH EACH MOTOR

Class A	
*Ardon 999 P. B.	\$16.50
*Ardon 999 H. B.	19.50
*Ardon 139 H. B.	21.50
*Atom 999	15.50
*Bantam 199	18.50
*Marvin 14	15.50
*Olsson 19	14.50

Class B	
*Olsson 23	\$16.50
*O. K. 23	15.50
*Merlin 23	18.00
*De Long 30	19.50
*Cannon 300	19.75
*Bullet 375	15.00
*Thor 30	9.95
*Rogers 29	15.75
*Mecraft 29	18.50
*Forster 29	24.75
*Torpedo 29	18.50

Class C	
*Olsson 60	\$18.50
*OK Racway 60	23.00
*Eville 35	18.00
*Ken 610	25.00
*Denymate 87	17.85
*Atwood Champion	23.00
*Pacemaker 59	24.95
*Hornet 60	25.00
*McCoy 49	35.00
*McCoy 60	35.00
*Maidwell 49	18.00
*OK Super 60	18.00
*OK Twin	20.00
*Super Cyclone S.L.	22.45
*Super Cyclone D.L.	23.40
*Vivall 49	20.00
*Aero Mighty Midget	24.95
*Rockets 46	14.95
*Conceptor RV	35.50
*Lose coil and condenser	

DIESELS	
Mite A	\$18.95
Drone B	21.50

JET	
Dyna Jet	\$24.50
Minijet	35.00

F.F. GAS KITS

Buccaneer 36	1.50
American Ace 36	1.50
Super A Skyrocket	2.95
Brigadier 36	1.95
Piper Cub Coupe	1.95
Baby Playboy	1.95
Zipper	1.00
Mike	2.00
Rocketeer	2.95
Hunt	2.50
Aero Champ	2.50
Miss Tiny	1.35
Crusader 42	1.95
Ardent Air	2.00

CLASS B

Muskeeter 54	3.50
Buccaneer 48	3.50
Brigadier 54	2.95
Buccaneer Spec.	3.95
Playboy Junior	2.50
Zipper	5.95
Jersey Javelin	3.95
Humdringer	3.95
Westerner B.	4.50
Roamer	3.95
Pacer	3.95
Diamond Demon	2.00
Brooklyn Dodger	3.95
Wanderer	2.50
Coronet	3.50
Sportman	5.45
Airfoiler	5.50
Interceptor	2.98

CLASS C

New Buccaneer B'd	\$5.00
Custom Cavalier 108	15.95
Piper Cub Super	
Cruiser	10.95
Flamingo Amphibian	9.95
Playboy Senior	4.50
Westerner C.	5.95
Sealplane	8.95
Pacer	9.95
Spearhead Sr.	3.95
Mercury	5.50
Yagabond	5.50
Stinson Reliant	15.00
Super Sunduster	9.95
Buzzard Bombardier	8.95

RADIO CONTROL

Good Brothers radio equip. Receiver Escape-ment, Transmitter, 3 units (less batt.) \$59.50

BELL RADIO CONTROL

Packaged radio control ready for installation. \$120.00.

NEW TIP BOOK!

Here is a NEW—A DIFFERENT hobby catalogue. It's full of time and money saving information for modelers—construction short cuts, tips on motor starting and maintenance, hints for contest flyers. It answers hundreds of questions hobbyists ask. In addition this catalogue contains all hobby items—model airplanes, ships, race cars, railroads, gas engines and all accessories, supplies and tools. Every month new sheets are sent you with latest models and materials. Send for this combination Hobby Tip Book and Catalogue RIGHT AWAY! It's only 25c and will save you \$59.95. CUT OUT THE COUPON AND MAIL IT—TODAY!

SUPPLIES AND ACCESSORIES

ALUM. TUBING	
Dia.	per ft.
1/16"	100
3/32"	100
1/8"	100
5/32"	100
3/16"	100
1/4"	150
Universal	
Needle Valve	.750
Flareless	1.00
Needle Valve	\$1.00
S p i n t	
U-Reely Craft	4.00
Flow Torque	7.50
Perrycraft	
Tank	2.50
Froon Tanks	1.00
Alum. Prop	
13/16" 30c; 1 1/4"	
75c; 1 1/2", 1.00;	
1 3/4", 2 1/4", 1.50;	
2 3/4", 1.75	
Hi-Tension	
Ignition Wire	.15
per ft.	.03

POWER PLUS WET CELLS	
Free-Filter	\$2.25
Special	2.95
Race Car	
Booster	5.50
Aero lock	
lead	.25
B. H. Washers	1.0
Street Music	
Wire, all sizes,	
3 ft. lengths,	
Spark Plugs	.50
ca.	.50
Silksnap 90	.05
Silksnap GM	.05
3 for	.25

TREXLER AIR WHEELS

2" dia.	\$1.50
2 1/4" dia.	.60
2 3/4" dia.	1.00
3" dia.	1.25
3 1/4" dia.	1.50
3 1/2" dia.	1.75
Aero Cond.	.35
Aero Cond.	.35
Aero Paper	
Minimum Wood	\$1 Include 25c

PURE BROWN NATURAL-GUM RUBBER AT PRE-WAR PRICES

1 1/2" flat.	.01
3 1/2" flat.	.02
1 1/2" x 1/2" .014	
1 1/2" x 1/2" .02	

BALSA 36" STRIPS

1/16 x 1/16	.5c
1/16 x 1/8	.5c
1/16 x 3/16	.5c
1/16 x 1/4	.5c
1/16 x 3/8	.5c
1/16 x 1/2	.5c
1/16 x 5/8	.5c
1/16 x 3/4	.5c
1/16 x 1	.5c
3/32 x 1/16	.5c
3/32 x 1/8	.5c
3/32 x 3/16	.5c
3/32 x 1/4	.5c
3/32 x 5/16	.5c
3/32 x 3/8	.5c
3/32 x 1/2	.5c
3/32 x 5/8	.5c
3/32 x 3/4	.5c
3/32 x 1	.5c

BALSA 36" PLANKS

1/2 x 2	20c
3/4 x 2	25c
1 x 2	30c
1 1/4 x 2	35c
1 1/2 x 2	40c
1 3/4 x 2	45c
2 x 2	50c
2 1/4 x 2	55c
2 1/2 x 2	60c
2 3/4 x 2	65c
3 x 2	70c
3 1/4 x 2	75c
3 1/2 x 2	80c
3 3/4 x 2	85c
4 x 2	90c
4 1/4 x 2	95c
4 1/2 x 2	100c
4 3/4 x 2	105c
5 x 2	110c
5 1/4 x 2	115c
5 1/2 x 2	120c
5 3/4 x 2	125c
6 x 2	130c
6 1/4 x 2	135c
6 1/2 x 2	140c
6 3/4 x 2	145c
7 x 2	150c

BALSA 36" SHEETS

1/32 x 2	7c
1/16 x 2	8c
3/32 x 2	9c
1/4 x 2	10c
5/16 x 2	11c
3/8 x 2	12c
1/2 x 2	13c
5/8 x 2	14c
3/4 x 2	15c
7/8 x 2	16c
1 x 2	17c

U-CONTROL GAS KITS

Flying Maniac	\$4.95
Perky A	5.00
Stardust	10.00
The Bat	4.95
The Bug	5.50
A. J. Fireball	10.00
Miss Behave	3.95
Beechcraft	9.95
Whizzer Deluxe	9.95
Junior Cruiser	5.95
Falcon Sportster	5.45
Knight Twister	7.50
Fokker D-7	5.50
Beacar	4.95
Cyclone	4.95
Super V Shark	7.95
Whirwind	4.95
Blip Trainer	3.95
Flicker	3.95
Ercoupe	10.50
Baby Miss Behave	3.95
Eight Ball	6.95
P-51 Controller	7.95
Navion	3.95
Grunman Bearcat	
F8F	5.95
Dunright Special	14.95
Skycycle	7.50
Navion (Capitol)	7.50
Presto-link	10.50
Streamliner	4.00
Shampee De Luxe	7.00
Whizzer Sd.	7.00
Custom Cruiser	10.00
Dreamer	7.50
Waco Sd.	8.50
Navion De Luxe	10.50
Navion (Eagle)	6.50
Speedster	5.45
Cadet	5.45
Beechcraft P-39	12.50
Swift	7.50
Snuffy	3.95
Boeing D-5	2.95
Herliner Joyce	4.95
Whippet	3.95
Tyro	3.95
Volite Cruiser	5.95
Vee Gee	10.00
Pineball Fighter	8.00
Fortuit Corsair	12.50
Gee Bee	2.95
Lancer	5.95
Atomic	3.50
Ercoupe	12.50
Topping 100	10.00
Demeco Special	7.95
Baby V	2.95

SPONGE WHEELS

1 1/2" dia.	\$2.15
3 1/2" dia.	2.50
4 1/2" dia.	2.75
5 1/2" dia.	2.75
Heco Bell	25c
Togate Switch	45c
Slide Switch	30c
Top Jack	12c
Pee Wee Clip	10c
Terminal	15c
clip	5c
Alligator clip	10c
Solderless	
Plug	12c
Lugs	12c
3/4" or 1/2"	
spark plug	5c
gasket	2c
Elevator	20c
Hinges	20c
8 x 1/4 x 1/8	
Class A, pc.	13c
8 x 1/4 x 1/8	
Class B, C	
pr.	20c

SPONGE RUBBER WHEELS

1 1/2" dia.	40c
2" dia.	40c
2 1/2" dia.	50c
3" dia.	50c
3 1/2" dia.	50c
4" dia.	50c
4 1/2" dia.	50c
5" dia.	50c
5 1/2" dia.	50c
6" dia.	50c
6 1/2" dia.	50c
7" dia.	50c
7 1/2" dia.	50c
8" dia.	50c
8 1/2" dia.	50c
9" dia.	50c
9 1/2" dia.	50c
10" dia.	50c
10 1/2" dia.	50c
11" dia.	50c
11 1/2" dia.	50c
12" dia.	50c
12 1/2" dia.	50c
13" dia.	50c
13 1/2" dia.	50c
14" dia.	50c
14 1/2" dia.	50c
15" dia.	50c
15 1/2" dia.	50c
16" dia.	50c
16 1/2" dia.	50c
17" dia.	50c
17 1/2" dia.	50c
18" dia.	50c
18 1/2" dia.	50c
19" dia.	50c
19 1/2" dia.	50c
20" dia.	50c

COLOR DOPE

11 Ass'd. Col.	15c
2 oz.	20c
4 oz.	30c
1/2 pt.	50c
1 pt.	1.00
2 pt.	2.00
4 pt.	4.00
1 gal.	8.00

CLEAR DOPE

1 oz.	15c
2 oz.	20c
4 oz.	30c
1/2 pt.	50c
1 pt.	1.00
2 pt.	2.00
4 pt.	4.00
1 gal.	8.00

PACKING CHARGE

1/32 x 3	10c
1/16 x 3	11c
3/32 x 3	13c
1/8 x 3	15c
3/16 x 3	17c
1/4 x 3	19c
5/8 x 3	25c

BEVELED 36" TRAILING EDGES

3/32 x 3/8	3c
1/8 x 1/2	4c
3/32 x 5/8	5c
3/16 x 3/4	6c
3/32 x 7/8	7c
1/4 x 1	8c

POWERED BOATS

Miss America	5.95
O-Gee	10.95
O-Gee Kit	5.95
Harco 40	4.50
Sea Bird	8.00
Sea Bird	4.95
Hardware	
Kit	2.95
Sea Gull	10.00

(Continued from page 8)

for years. We think that increased wing and power loadings for the larger classes would do what Mr. L. advocates—automatically produce better, cleaner designs more along the lines of what existing full scale jobs look like.

Only recently we heard one "oldtimer" discussing the famous K-G gas model during its appearance at the St. Louis "Nationals" back in '35. He described Charlie Grant and Joe Kovel running alongside the model and steadily it while it gathered speed gradually and became airborne. "Like a transport," he said.

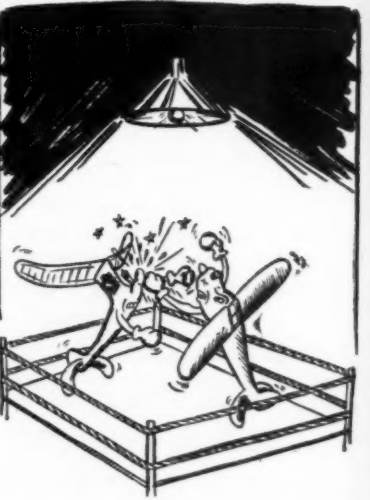
Ah, the good old days.

A VAST nationwide program of model contest and club sponsorship has been launched by the American Legion, and it represents one of the most comprehensive plans for the development of model aviation ever attempted.

The Legion entered the air-modeling picture through the efforts of the Institute of Air Age Activities. The veterans organization "will sponsor local, county, district, state, regional and national model airplane contests under rules and sanction of the A.M.A. of Washington, D.C."

Initial Legion announcement set forth its plan stating: "The American Legion believes that through this nationwide model airplane program it can provide wholesome activities for at least 5,000,000 teen-age boys. Any boy with a jack knife and 15 cents can participate. The program will include building of control line and free flying plane models. It will include rubber-powered models, hand-launched, and tow-launched gliders. There will be 14 different events."

Where existing sponsorship is available to local and state meets, the Legion will assist if the currently active leaders desire. Where no organized meets have been held, it will initiate competition and provide



prizes. Expense-paid trips to the National meet are a feature of the nationwide plan. These trips will go to state champions who will compete in the National finals the third week in August. By the time this reaches print the locale of the meet will probably have been definitely decided upon.

AMERICAN MODEL AVIATION lost one of its great leaders last January when Glen Rymer of Akron, Ohio, was killed in an airline crash in Virginia. Sadly enough, Mr. Rymer was flying to Miami, Fla., to co-direct the winter control line championships there. He had been the sparkplug behind a revitalized model aircraft program in Akron and around him had rallied many former leaders and champion flyers. Last September in Wichita at the annual meet-

(Turn to page 79)

MAIL THIS COUPON TODAY

GMCO MODEL CRAFT HOBBIES (MA-4) (Tel. 1Amaica 3-9140)
169-15 Jamaica Ave., Jamaica 3, N.Y.

Please rush me at once my combination HOBBY TIP BOOK and CATALOGUE for which I am enclosing 25c. I am also attaching a list of items I need. Send them right away.

NAME _____

ADDRESS _____

CITY _____ STATE _____

TO ORDER

Send full remittance or send \$1.00 and we ship C.O.D. for balance. We prepay postage and insure all orders over \$1.50.

20-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77

GAS MODELERS! FOUR BOOKS YOU MUST HAVE \$1.00 EACH POSTPAID

It's easy to be an expert when you own these easy-to-read informative books, completely detailed, yet non-technical. Send for them today! If not worth 3 times the price, return within 7 days and money refunded.

MODEL GAS ENGINE HANDBOOK \$1.00 P.P.

OVER 45,000 COPIES SOLD

150 pages of the theory and practice of model gas engine operation. 15 chapters, 83 pictures, cuts, and diagrams. Instruction sheets for 50 different engines. Blueprints. Trouble Shooting. Check full of information for the beginner and expert.

CONTENTS: Part 1. Theory—ignition—lubrication—metallurgy—finishes—mathematics—experiments—accessories—72 "don'ts"—trouble shooting. Part 2. Specifications of 64 engines: class, bore, stroke, H.P., weight, props, fuel, etc., etc. Part 3. Blueprints & instructions for building two engines. Part 4. Directory of 51 model engine manufacturers. Part 5. Instruction sheets for 50 different engines. Part 6. Dictionary of Model gas engine terms.

GAS MODELERS GUIDE \$1.00 P.P.

OVER 15,000 COPIES SOLD

An encyclopedia for the model gas engine enthusiast. How to use your engine in planes, boats and cars. 170 pages—15 chapters—82 cuts, pictures, diagrams. **CONTENTS:** Free Flight Planes: matching plane to motor, balance, inverting, propellers, vibration, ignition and fuel troubles. Control Line Planes: sport vs. speed, take off, safety control handles, tanks, AMA rules, etc. Race Cars: classes and types, construction, ignition, operation, timing, etc. Model Boats: types, engine mounting, fuel and waterproofing, props. Radio Control, Looking Ahead: flying wings, plastics, props, engines, radio control, batteries, magnets, timers, diesels, jets, rockets, etc. Winning Contests: complete details. Club Organization and Directory. Gas Engine Construction Data. AMA Gas Rules. Books and Publications. Latest Engine Instruction Sheets. Dictionary of Terms.

GAS MODEL PLANE CONSTRUCTION \$1.00 P.P.

OVER 10,000 COPIES SOLD

Here is available for the first time a complete book on how to construct your free flight and U-Control gas model planes. Comprehensive without being technical, the beginner and expert alike will find answers to all their problems. Simplifies all your problems from tools needed to repairing your model. Contains many time-saving hints known only to the fellows who have built hundreds of planes. 150 pages—over 200 pictures and diagrams—13 chapters.

CONTENTS: Gas Model Structures—Tools and Equipment—Basic Glue Joints and Structures—Fuselages—Wings—Tail Surfaces—Mounting Engines—Mounting Accessories—Sanding and Finishing Frames—Assembling Models—Covering—Doping and Finishing—Repairs.

CONTROL-LINERS \$1.00 P.P. HOW TO BUILD AND FLY THEM

10,000 COPIES SOLD

Not just ANOTHER book. But a real informative, constructive and USABLE book on the history, theory and practice of U-Control planes—how the sport started, types, designs, controls, construction, power plants, propellers. FLYING, contests, etc., etc. This is a real book and you will use it—not merely read it! 157 Pages—160 Pictures and Diagrams—17 Chapters.

CONTENTS: History of Controlled Models, Methods of Flying, Types of Models, Basic Design, Structural Design, Flight Controls, Engine, Flap and Accessory Controls, Construction, Power Plants, "Dress" Details, Shaping and Sanding Models, Covering, Doping and Painting, Final Assembly and Checking, Propellers, Flying, Contests. These four books were written by Bernard B. Winston, gas model specialist. A bargain at \$1 each.

DEALERS

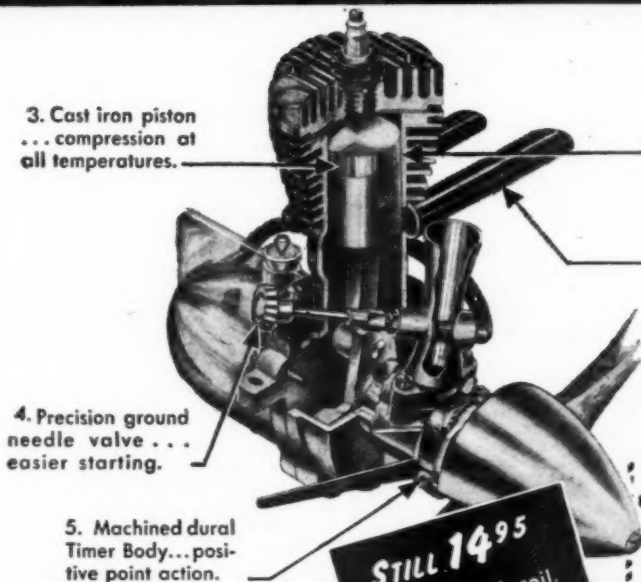
If your jobber hasn't in stock order direct or send for our sensational "PROFITS GUARANTEED" offer

MODELERS: If you can't get these vital books at your local hobby store, enclose remittance and order direct from us. Only \$1 per book postpaid.

FREE GET OUR BIG, ILLUSTRATED 32 PAGE RETAIL CATALOG LISTING HUNDREDS OF POPULAR HOBBY ITEMS. OVER 200 ILLUSTRATIONS.

AMERICA'S HOBBY CENTER, Inc. Dept. MM47, 156 W. 22nd St. New York 11, N. Y.

Phantom... 5 WAYS BETTER



● The finest materials...combined with the highest quality engineering...make the 1947 Phantom P-30 THE outstanding CLASS "B" ENGINE. Order yours today... Enjoy trouble free performance.

P-30 SPECIFICATIONS

Displacement . . .295 cu. in. Bore . . .711 in.
Horsepower . . .1/5 Stroke . . .750 in.

Rated Class "B" Under NAA Rules

PHANTOM MOTORS DISTRIBUTING CO.

806 East Gage Avenue, Dept. B 4, Los Angeles 1, Calif.

Please send me a New 1947 P-30, as checked below:

- ☐ with Coil, Condenser, Gas Tank and Spinner \$14.95
- ☐ with Coil, Condenser, Gas Tank and Flywheel \$15.95
- ☐ Flywheel only \$1.85 (NOTE: Postage Prepaid on CASH Orders)
- ☐ \$1.00 enclosed, send balance C.O.D.
- ☐ Payment in Full.

NAME _____

ADDRESS _____

CITY _____ STATE _____

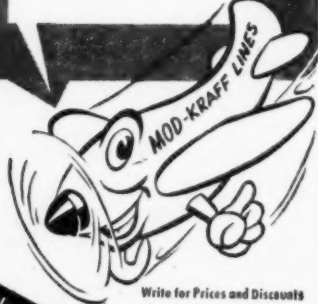
Add 3% if in California. Prices slightly higher in Foreign Countries

STILL 14⁹⁵
complete with coil,
condenser, gas tank
and spinner



MFD. BY
AUTOMATIC SCREW
MACHINE CO.

**MOD-KRAFF has
the LEADING
LINES.....**



Write for Prices and Discounts
on Your Letterhead. No Re-
tail Mail Orders Accepted.

Cleveland • Comet • Megow • Lucas & Smith •
Ideal • Maircraft • Hawk • Consolidated • Marine •
Varney • Stanzel • Scientific • American Jr. • X-Acto •

Testor • Falcon • Aero Spark • Champion Spark •
Plugs • Atom • Jasco • Eagle • All Star • Sullivan •

Wire • Capital • Austin Craft • Froom • Minijet •
Duro Matic Products • Smith Coils • Ray • Henry •

Model Eng'ng • DeBolt Models • Topping • Power •
Plus • Girard • Burgess • Berkeley • Perrycraft •

Super Motors • Monogram • Herkimer • Model •
Industries • Midwest Stands • Skyline • Brown •

Junior • Contestor Motors • Fleetwind • Ohlsson •
Hornet • Cannon • Bantam •

Wensen •

mod Kraff Co

840 Union St., New Orleans 12, La.

WEST COAST TIPS

by JOHNNY DAVIS

THIS month we are going to give some unsung heroes a boost. In California the sun shines all winter long (so our earnest Chamber of Commerce says) hence there isn't much activity out here that is driven indoors. Therefore, if a model fan goes to the extreme trouble of making an indoor job, we believe he is a hero.

For years there hasn't been a decent indoor location in or near Los Angeles where this exacting work could be carried on. San Francisco, Oakland and San Diego all have

handicapping the experts has been brought forth. It simply consists of cutting down the top man's engine run a second each time he places first in a contest. This would work as follows: John Doe wins first place with a what-zit powered by a what-you-may-call-it. On the winning flight he used a 20 second motor run. This is duly recorded. At the next contest his engine run is cut down one or possibly two seconds, thus theoretically cutting down his amount of suds and making him work to beat the other boys. After



The famous "Hatchetmen," Ed Abacharie and Don Gulotta, who won Western Open Team event and have been strong winners since

some place to fly, yet the highest flight times consistently come from the Los Angeles area. This fact has long baffled the experts who always try to figure the form sheet. But the answer seems to be . . . perseverance.

This ability to stick with their slow-moving crates is just now about to pay off—in a big way, that is. If everything stays copasetic, the U. S. Naval Air Station at Santa Ana may become available to modelers in the Los Angeles area.

This Navy Station has, among its spacious acres, two of the biggest blimp hangars in captivity. The inside dimensions are 1000 ft. long, 500 ft. wide, and 186 ft. high, which is some pumpkins for indoor flyers. All they need is about 200 sq. ft. of that floor space and—Easterners look out for indoor records, too!

There has been some activity all winter in places like the National Guard Armory with a 40 ft. ceiling, and the Angelus Temple which has a high ceiling but has seats all over—however, with a beautiful spot like the blimp hangars, those microfilm jobs would never come down.

Credit for pushing a lot of the indoor builders into motion goes to Bill Atwood and Art Snyder, two of the real oldtimers. Frank Cummings, Don Donahue, Bob Holland and Ted Just are the boys who are right at the top of the ladder in flight times.

Those interested in doing this type of work should contact any of the above mentioned fellows for information as to time, place and location of their various flying sites for the present.

Last week we ran across a new trend for free flight handicapping. In the California area—and we presume this is prevalent any place in the country where many free-flight contests are held within a given area—the same names appear in the winner's circle with monotonous regularity. Somehow the same guys always pop up to grab a trophy.

In order to add more interest, an idea for

he has fallen below third place for two consecutive contests he may be restored to his original motor run length, or if he keeps winning he keeps getting cut down.

So far as we can see this idea has merit, but it hasn't been thought out far enough. For instance, we can see the old hotshot boys "pointing" for the big contests by getting beat in the two or three preceding contests and then coming up on the big day with a full 20 second run against a plainly inferior airplane which, because its owner hadn't figured ahead, is now handicapped with an 18 second run.

Nope, the idea is fine but it doesn't go far enough. We would rather see another set of classes started which would automatically advance each contestant by his ability, the same way the A.A.U. works. In the Amateur Athletic Union, an athlete who, shall we say, is twelve years old, is a junior. But after he has won the junior event just once, he becomes a senior in that event. If he wins the senior event just once, even if he still is twelve years old, he now competes against the open class. If he still wins, he steps into the highly expert professional

(Turn to page 14)



"A bit too realistic, don't you think?"

The TOP WINNERS USE

K & B TORPEDO

FOR CONSISTENT DEPENDABLE
RECORD BREAKING PERFORMANCE

SPECIFICATIONS

2-cycle rotary valve

.725" Bore

.724" Stroke

.299 Cu. In. displacement
(Conforms to A.M.A. Class
B Free Flight and Class III
U control)

7½ ozs. Bare Weight

\$18.50

Less coil
and condenser

AND FOR GOOD REASON**—This record breaking, proven engine can be depended on when it counts most. Every K & B TORPEDO ENGINE is tested and run before leaving the factory—This is your assurance of positive performance.

We as manufacturers of this new world famous engine are constantly striving wherever possible to improve it, that's why we say—

LOOK AT ALL THESE

Added FEATURES

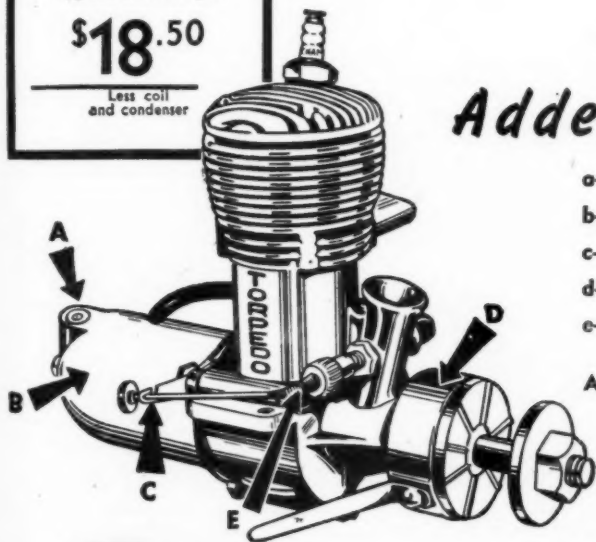
- a—New improved leak-proof spring type filler
- b—All metal, large capacity gas tank.
- c—Slotted needle valve mount bracket.
- d—Fully enclosed, easily adjusted timer points.
- e—New flexible type needle valve with positive adjustment.

AND in addition Pressure Oil feed to connecting rod for longer life.

FLASH

Now available as an accessory for your K & B TORPEDO a high compression "HOT" head. \$1.25

K & B TORPEDO ENGINES, Parts and accessories are available at your local HOBBY SHOP.



K. & B. MANUFACTURING CO.
6901 SOUTH EASTERN AVENUE, BELL, CALIFORNIA

Berkeley Approved— Means Quality Guaranteed

Dependable quality means a lot to you model builders. You put plenty of time and effort into building your models. By buying proven products from your local Berkeley dealer you save time and money.

• AMERICAN JR.

"Ready-To-Fly" Models

A-J Americobra Glider (48 to a box)	\$.10
A-J Interceptor Glider	.50
A-J Whip-Power Mustang	1.29
A-J Fireball "U"-Control	10.00
A-J U-Reeley Handle	7.50

• NEW CO2 ENGINE

Manufactured by the makers of O.K. Engines. Weighs only 2 1/2 oz. complete with cartridge & accessories. Runs 20 to 60 seconds at 4000 to 7000 r.p.m. with one loading. Cartridge obtainable in any drug store. Priced at \$7.50 complete. Use a CO2 Engine in any of the following Berkeley Kit Models:

Buccaneer "30"	\$1.00
American Ace "30"	1.00
Executive "40"	1.25
Interstate Cadet	1.50
Stimson "150"	1.50
Cessna "140"	1.50
Culver "V"	1.50

• New 1947 Arden Engines. Complete with new style tank and needle valve at new prices:

Arden .099 Plane bearing Engine	\$16.50
Arden .099 Ball bearing Engine	19.50
Arden .199 Ball bearing Engine	21.50
Arden .099 Free-Flight Chassis	12.50
Arden .199 Free-Flight Chassis	13.50

• IGNITION ACCESSORIES

Coils

Aero Featherweight	\$ 2.50
Aero Quality	3.00
Aero Twin	4.00
Smith Competitor	1.95
Smith Firecracker	2.75
Smith Dual	4.50

Condensers

Aero Paper	\$.25
Aero Metal Case	.35
Smith Racing	.45

Spark Plugs

Champion, All Types	\$.50
---------------------	--------

• PROPELLERS

Flo Torque (Low Pitch)

8" to 14"	\$.50
16"	1.00
18"	1.00

Hi-Ball (High Pitch)

8" to 12"	\$.50
13", 14"	.65

Joyce

Replaceable Blade Plastic Props with extra blade

8"	\$1.00
10"	1.30

• DIESEL CONVERSION KIT

Convert your Arden .099 to a diesel. Kit includes fuel. \$4.00

• TWO-SPEED CONTROL LINE SUPPLIES

"Electraline" Wire, .011 or .014 dia.	
150 ft. coil	\$1.50
Relay	2.00
Ohisson 2-Speed Points	1.50

• STRANDED STEEL CONTROL LINE

7-strand. Flexible, non-kinking	
.015 dia., 70 ft. coil	\$1.00
.021 dia., 70 ft. coil	1.60

• NATURAL BROWN RUBBER

Available again. Pre-war prices	
1/8" wide, 50 ft. for	50c
3/16" wide, 50 ft. for	70c

• PACKAGED

MODEL FITTINGS

Electrical Fittings

E-1 Midget Tip Jacks	2 for 25c
E-2 Pee-Wee Clips	2 for 20c
E-3 Terminal Clips	2 for 5c
E-4 Alligator Clips	2 for 20c
E-5 Solderless Plugs	2 for 25c
E-6 Connector Lugs	3 for 5c

Ignition Fittings

I-1 1/8" Spark Plug Gaskets	2 for 5c
I-2 3/8" Spark Plug Gaskets	2 for 5c
I-3 Spark Plug Connectors	2 for 5c

Gas Model Fittings

G-1 Landing Gear Washers for 3/32" Wire	12 for 5c
G-2 Landing Gear Washers for 1/8" Wire	12 for 5c
G-3 "J" Landing Gear Bolts	4 for 25c
G-4 Wheel Collar & Hub	25c pair
G-5 Bolts & Nuts, Class A, 2-56, 3/4" long	12 for 20c
G-6 Bolts & Nuts, Class B-C, 4-40, 1" long	12 for 20c
G-7 Bolts & Nuts, Class B-C, 4-40, 1 1/2" long	12 for 20c
G-8 No. 2 Lock Washers	12 for 10c
G-9 No. 4 Lock Washers	12 for 10c

"Controller" Fittings

C-1 Elevator Hinges	4 for 10c
C-2 Swivels, Class A	15c pair
C-3 Swivels, Class B, C	20c pair

Rubber Powered Model Fittings

R-1 Propeller Washers, 1/4" O.D.	24 for 5c
R-2 Propeller Washers, 1/2" O.D.	24 for 5c
R-3 Cupped Washers, 3/16" O.D.	12 for 5c
R-4 Cupped Washers, 1/4" O.D.	12 for 5c
R-5 Ball Bearing Washer	10c
R-6 Thrust Bearing, Small	3 for 5c
R-7 Thrust Bearing, Large	2 for 5c
R-8 Wire Prop Hook, Small	3 for 5c
R-9 Wire Prop Hook, Medium	2 for 5c
R-10 Wire Prop Hook, Large	5c each
R-11 Rubber Tensioner Spring	2 for 5c
R-12 Prop Folder Hinge, Complete Set	20c
R-13 3/8" Face Bushing dia.	5 for 5c
R-14 7/8" Face Bushing dia.	3 for 5c
R-15 Eyelet, 1/16" I.D. x 3/16" long	12 for 5c
R-16 Eyelet, 3/32" I.D. x 3/16" long	12 for 5c
R-17 Eyelet, 1/4" I.D. x 1/2" long	12 for 10c
R-18 Brass Nose Plug, Small	3 for 5c
R-19 Brass Nose Plug, Large	2 for 5c

• NEW! DRONE "DIESEL"

A .30 displacement compression-ignition engine, the first production made unit in the new growing field. Immediate delivery. \$21.50

• ARDEN FLIGHT TIMER

Reduced Price—New 1947 Model. \$1.85

• ARDEN BOOSTER JACK

Reduced Price—now \$1.25

• BERKELEY SPINNER

Used interchangeably on all engines without special adapters. 2 1/4" Diam. notched for propeller. Only \$1.00

• BERKELEY BUBBLE CANOPY

Big 1" scale, 7 1/2" long canopy. Made from extra heavy plastic \$1.00

• "REMOTO"

New U-Relay by Jim Walker with 2-speed engine control and insulated control wire. \$12.50

• LIQUID DYNAMITE

Makes any gasoline engine a "diesel." Just add 2 to 4 oz. to a quart of "Reg-Pink." Start on regular ignition. Warm up for 5 seconds. Pull off the ignition wires and let the model fly without the extra weight of ignition batteries. Pint Jar \$1.95

Reg Pink Fuel

The record breaking non-corrosive, non-gumming methanol fuel. \$1.25 quart.

• BERKELEY KITS—

Complete line of Berkeley Kits stocked at all times. Order from Berkeley ad on page 88.



Old timer Zip Grandell with beautiful all metal P51 built with Pete Engel. Motor is an original design .60 which turns the large prop at about 10,000 rpm

(Continued from page 12)

class and usually is considered tops. However, being hot on the right day to beat a senior or open athlete is quite a problem and usually takes a few years.

The big advantage for this type of grouping is that it is a great leveler of ability in any one class.

In the junior class every contestant will be competing against someone else who has never won a first place in junior competition. Therefore, you would have a "new name" winner at each contest.

The same would be true of the senior and the open class. The only class which could be tied up at all would be the expert or pro class, and when you get a bunch of experts together anyone can catch a thermal.

We would appreciate comment on this type of ability rating, and if anybody should try it out we will be glad to publish the result.

While we are on the rules question, here is one for you control-line speed fans to mull over. How about breaking up the racing classes into sleeve-bearing and ball-bearing classes?

In other words, there are lots of fellows who have sleeve-bearing engines who would probably like to race just as much as the fellows who have the superhot ball-bearing engines. However, it is a little silly to race an engine with a sleeve-bearing against a ball-bearing hot shot. Everything being equal, the ball-bearing engine will just naturally walk away from the sleeve-bearing job because of the power lost due to friction in the sleeve-bearings. By the same token, the sleeve-bearing engine is, generally speaking, ten to twenty dollars cheaper than the rugged customer with ball-bearings.

Just the same, whether a fellow has an enlarged pocketbook or a shrunken one the urge is still there to race against competition, and there is no reason why a modeler should be barred by the size of his pocket-book.

'47 NATIONALS!

JUST as we go to press, we hear officially that the big event this year will be held Aug. 18 to 22 at Minneapolis, Minn. See further details of this flash in the May issue of MODEL AIRPLANE NEWS.

Subscribe to the New Berkeley Catalog 25c copy

For the first time, a loose leaf catalog with new up-to-the-minute pages mailed three times a year. In addition, performance charts, new ideas, and data sheets are included. No model builder can do without it.

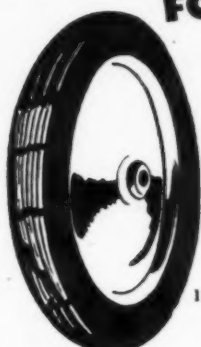
MAIL ORDERS If no Berkeley dealer is near you, order by mail. Include 25c Postage on orders less than \$2.50. Orders over \$2.50 sent post free in U.S.A.

Berkeley Model Supplies—N.Y.
140 Greenpoint Ave.—Brooklyn 22, N.Y.

STEEL WHEELS

AT SENSATIONALLY LOW PRICES!

A Size and Style—
FOR EVERY PURPOSE



12x1.75
Ball bearing, unpainted heavy gauge steel disc wheel 7/16" axle...\$2.50; \$4.50 pair; \$8 set of 4, with drive pulley 50c extra.

Ball bearing, heavy gauge steel disc wheel, unpainted, 1/2" axle...\$2.75; \$5-pair; \$8 set of 4.

Send \$2. Balance C.O.D. on wheel orders.



10x1.75
Oilite bushing, painted red, heavy gauge steel disc wheel, 7/16" axle...\$2.25; \$4.25 pair; \$8 set of 4.



10x1.75
Ball bearing disc wheel of heavy gauge steel, unpainted, 7/16" axle...\$2.25; \$4 pair; \$7 set of 4.



8x2
Painted red, heavy gauge steel disc wheel, bronze bushing, 3/8" axle...\$2; \$3.75 pair; \$6.50 set of 4.

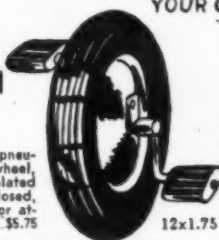


8x1.75
Steel sleeve, heavy gauge steel disc wheel painted red, molded rubber tire, 7/16" axle, 75c; \$1.25 pair; \$2.25 set of 4.

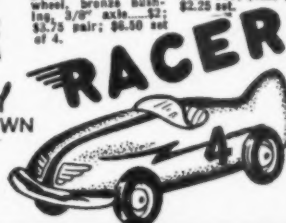


TRICYCLE front wheel Assembly

Consisting of: 12x1.75 semi-pneumatic tire, steel disc wheel, painted red, cadmium plated pedals, ball bearing enclosed, cadmium plated brackets for attaching to frame...\$5.75



build YOUR OWN



AXLES!

Steel axle, 3/8", 7/16", 1/2" diameter, drilled for cotter pins, 35c foot. State length desired.

DEALERS!

Dealers, Jobbers and Manufacturers! Contact us for prices on wheels.

Famous Airflo POWER BIKE

FOR ONLY **\$190**

CUSTOM-BUILT WHIZZER POWERED —OR— 1 1/2 H. P. BRIGGS & STRATTON



SEND \$25 BALANCE C.O.D.

\$190

Sturdy Construction for Heavy Duty
Look at these features: Motorcycle saddle, chrome rims, puncture proof tubes and heavy duty tires, knee action, large heavy duty frame; modern in every detail.

POWERED with Automatic Clutch!

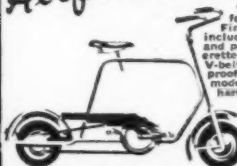
Speeds along at 30-32 miles per hour, gives 80-100 miles to the gallon of gas. A wonderful, safe power bike for work or play



\$190

SEND ONLY \$25 BALANCE C.O.D.

ULTRA-Streamlined Airflo SIDEWALK BICYCLE



This is the ideal bicycle for the youngster 4-7. Fine construction throughout including ball bearing wheels and pedal assembly, special leatherette covered saddle and safety V-belt drive. It has big puncture proof tires for an easy ride and a modern tubular steel frame for hand use.

Send \$10 Balance C.O.D.

Free headlight given with Sidewalk Bike order.

\$29.95

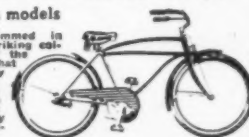
\$39.95

FREE
DeLong "30" or Bantam Class "A" Motor—a \$19.50 Value—given absolutely without charge with each purchase of an AIRFLO power Bike!

The Airflo BICYCLE "MODERN" Advanced Design

Boy's and Girl's models

Here is a bike trimmed in chrome, finished in striking colors, embodying all of the latest features, a bike that will please every boy and girl. It has ball bearings throughout, a chain guard, balloon tires and a strong kick stand, yet sells for only \$39.95. Send \$10, balance C.O.D.



Send in your order and get a Chrome Carrier Free!

TROPHY CUPS



A souvenir of highly polished aircraft aluminum

A modern award for a modern age

\$1

BICYCLES PLANES TRAINS
LEVELAND CYCLE & MODEL CO.
14679-81 EUCLID • CLEVELAND, O.

"All Steel" WAGONS

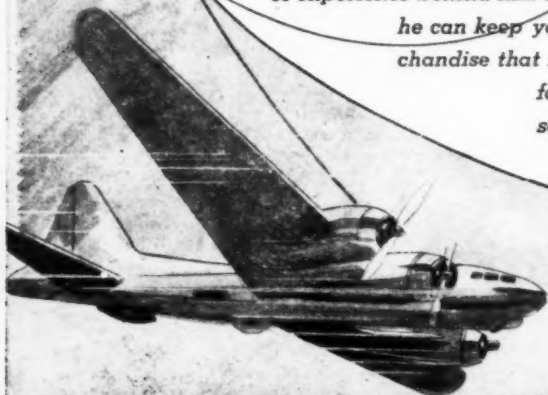
Large, sturdily constructed. Roller bearings throughout. Send \$5. Balance C.O.D.

\$12.95



EVERY PIECE has its place!

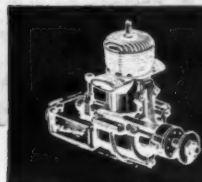
It takes many parts and pieces perfectly fitted to complete your model plane picture... the advice of one who knows... Walthour and Hood's model plane specialist... can help you make a success quicker... with years of experience behind him and constantly in touch with the latest development he can keep your stocks well balanced and up-to-date with merchandise that fits your sales picture... and build greater profits for you through a complete overnight service that enables lower inventories.



COMPLETE KITS



COMPLETE SUPPLIES



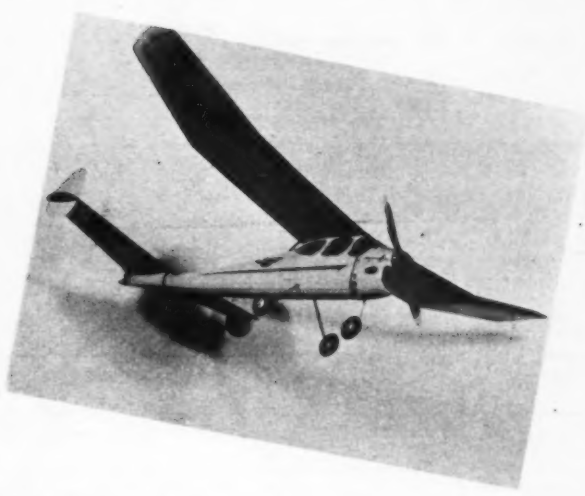
MOTORS AND PARTS



**Walthour
and Hood
company**

Write for monthly model plane and hobby shop bulletin which lists merchandise available for immediate delivery to dealers in the Southeast. Also ask for our bicycle parts and accessories, sporting goods, toy, and gift bulletins.

PRYOR STREET AT AUBURN AVENUE, ATLANTA 1, GEORGIA



THE GHOUL

by DON McGOVERN

IN THIS issue we shall endeavor to fill the gap that exists between the pylon type contest designs and the more realistic or semi-scale models. With the rules specifying that the model be of the cabin type, and weighing not less than 7 oz. per hundred sq. in., it is evident that the familiar contest design with a light wing loading and high pylon is efficient but illegal.

The Ghoul is an attempt to meet and utilize these rules to the greatest advantage, incorporating both realism and contest performance in a graceful stable design. An attempt was also made to break the usual monotony in the appearance, hence the twin V tail and the optional tricycle landing gear. The present wing loading requirements permit additional strength in the framework and extra batteries if so desired.

If your Class B engine is collecting dust, it's high time you pulled out the razor blades and dried up glue and started work.

The first necessary step in constructing the *Ghoul* is enlarging the plans to full size. This often discourages some, but it shouldn't because there is nothing difficult in the procedure. Both plates are drawn to

1/4 scale and may readily be enlarged with a pair of dividers. For the rudder outline and the fuselage sideview, the page can be ruled in 1/8" squares, corresponding to 1/2" squares on the full size drawings. This technique will enable you to reproduce the most difficult curves exactly. It may also be used on the wing ribs and wing tips.

The wing itself is laid out in the conventional manner so no trouble should develop. Note that the trailing edge is notched to receive the rib, thereby preventing the edge from buckling later when covered. Select only the straightest wood for the wing, using the heavier grades in the inside panels as they are subject to greater strain. If available, use quarter grain stock for the ribs. The centersection ribs are 1/16 in. undersize on top and bottom to allow for the sheet balsa. Cut all the wing gussets from 1/16 in. or 3/32 in. plywood. When joining the wing sections, sufficient glue saves trouble later.

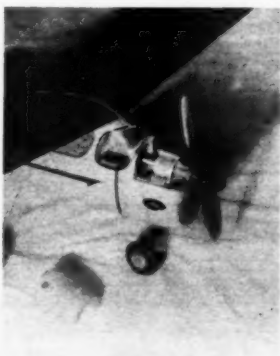
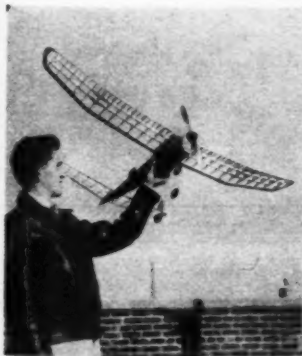
On the other hand the stabilizer is not constructed in the usual way. Due to the symmetrical airfoil, it would be hard to construct it as a wing. Instead, lay out the leading and trailing edges and the spars

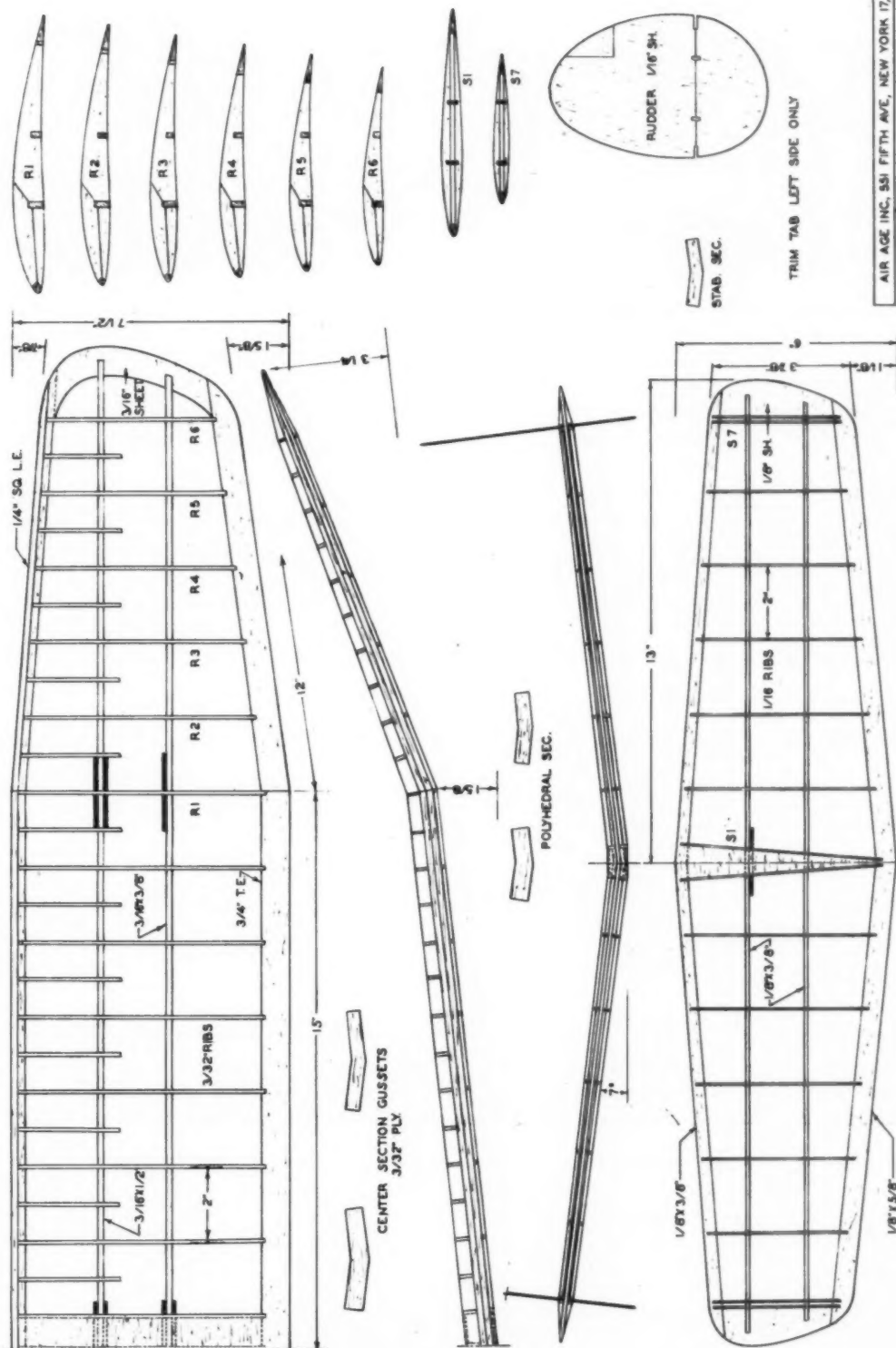
as 1/8 in. squares. 1/16 in. x 1/8 in. strips are then butted to the 1/8 in. sq. spars. In other words, the stabilizer is first constructed in a flat plane; later the spars are laminated with 1/8 in. square stock above and below, tapering toward the tips. Sheet wood caps are then glued over the 1/16 in. x 1/8 in. and then cut to the proper airfoil. An advantage of this type of construction lies in its resistance to warps due to the laminated construction.

A 7 degree V is added before joining the two sections with a plywood gusset. Again the centersection is planked. The rudders are cut from medium grade 1/16 in. sheet balsa, split and notched as indicated. They are not glued in their respective slots until the stabilizer has been covered and doped. A small trim tab may now be added with the aid of an aluminum hinge.

With the wing and tail assemblies out of the way we focus our attention on the fuselage. Actual construction begins with laying out the two sides of the body on the plan. Select longerons from medium grade balsa, testing each for warps and uniformity. At crosssections E and J splicing is advisable, although not absolutely necessary. The motor mount bearers are

(Turn to page 45)

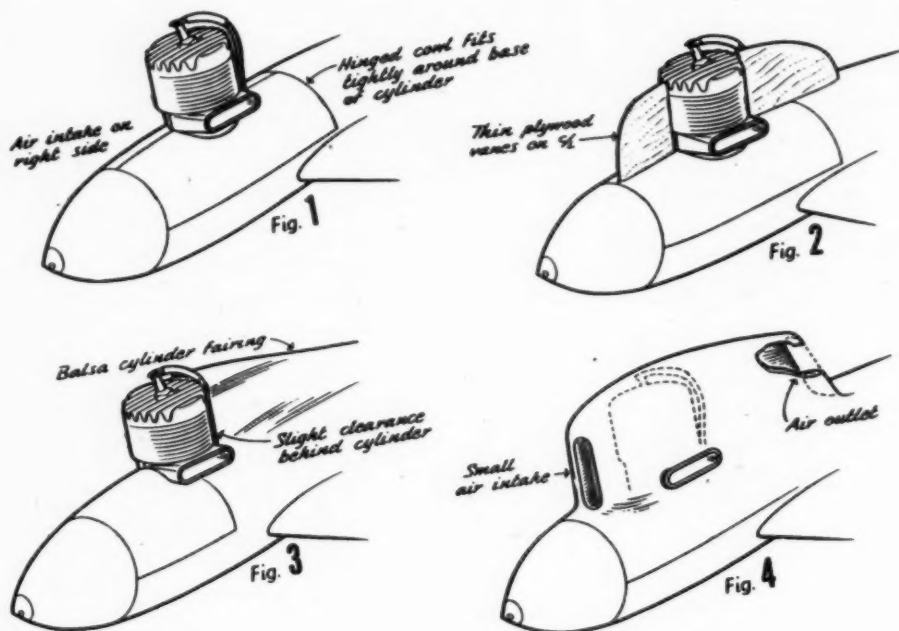




AIR AGE INC. 551 FIFTH AVE. NEW YORK 17, N. Y.

SCALE 1/8" = 1'
WEIGHT 28

THE GHOUL



SPEED COWLS

The proper cowl may gain you that last extra mile of speed—study this discussion carefully

by H. A. THOMAS

MODEL design, like that of full scale aircraft, is a case of constant compromise. One factor usually has to be sacrificed to some degree in order to achieve a desirable effect in another. The question concerning engine cowls as opposed to uncowed engines is essentially this: Does a completely cowed engine, considering the fact that frontal area is increased and there is a turbulent flow of air inside the cowl, actually pay dividends in speed over an engine closely cowed at the base but with the cylinder head exposed?

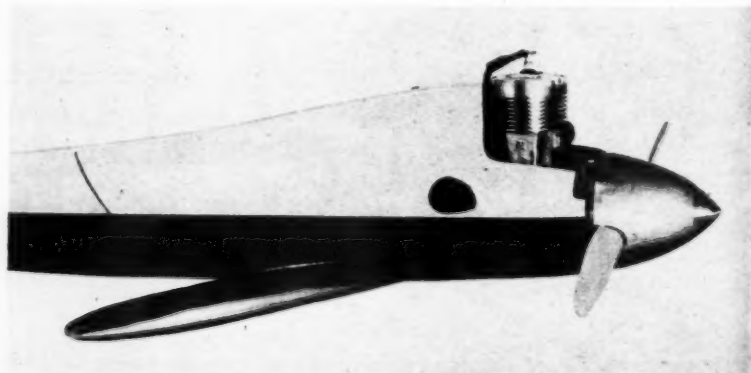
Don Newberger's 134 mph speed made with a cowed model would lead us to believe that engine cowls are worthwhile, yet there are many other models which clip off high speeds with cylinders exposed. The best we can do on this subject is to outline four methods of handling the problem and let you decide for yourself which system seems most advantageous for your own use.

FIG. 1—First is the simplest of all: a neatly faired nose which allows only the exhaust port and the cooling fins to be exposed. Here the cylinder is just where the manufacturer meant it to be—in the air stream. We can be sure that there will be no problem of overheating, and we tolerate the turbulence behind the cylinder

in order to get best cooling. The sparkplug is accessible here and the high tension lead fits closely behind the cylinder. A separate opening ought to be provided for carburetor air intake and to facilitate choking. The needle valve can extend through this same opening. The sketch suggests a divided cowl, hinged at the sides for access to the engine. Since the curve is essentially a simple one, the cowl might be a bent sheet of aluminum held in place by small screws.

FIG. 2—Next is a modification of the first and is of questionable value since it is based on theory alone. It has been used in the southwest, although we do not know whom to credit with its conception. Thin plywood fins or vanes, with sharpened edges, are mounted vertically in front of and behind the cylinder. The assumption is that these serve to reduce turbulence in the air flow by dividing it in front and at rear of the cylinder. It

(Turn to page 44)





Metal fairing strips insure against distortion from tightened covering

FINISH FIRST

In building your model do you consider its finish last? This author says it should be planned first

by FREDERICK K. HOWARD

ONE of the most critical phases of detailed scale model construction, particularly in the case of fabric covered models, is the finishing process. Exact detailed workmanship is often offset by an inferior finish or by distortions of the structure from the finishing process. The importance of scale model finish has always been recognized but the relation of the structure to the finish, and the technique of scale model fabric work are subjects that heretofore have not been adequately treated.

The view that the finish of a detailed scale model is simply the last stage of construction and chiefly a matter of ingenuity takes more for granted than seems reasonable. Such a view suggests the use of the covering and finishing techniques followed in other types of model airplane construction, and while these techniques are satisfactory in some degree and do allow a finish of one kind or another, the results frequently leave much to be desired for the detailed scale model.

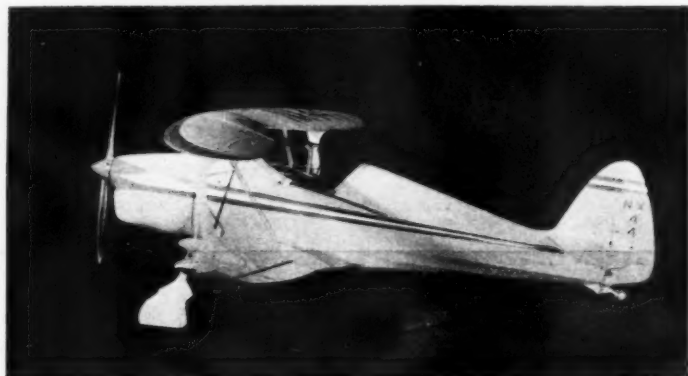
A fact of greatest importance is that scale models must be planned from the first with the definite idea of obtaining the type of finish precise craftsmanship deserves. This article is being written with the belief that more specific information on scale model fabric work will be helpful to many model builders.

Builders of detailed scale models will for some time be faced with the problem of reproducing in miniature doped fabric structures. For although uses of fabric in the aircraft industry are declining due to the development of other covering materials, doped fabric covering still has many advantages principally in the personal plane field.

Model builders are fortunate in having available covering materials which, when properly used, can duplicate in tautness, curvature and finish the fabric covering of full sized aircraft. Silk, for the scale model, remains tops for this purpose. Gas model type Silkspan paper is also highly satisfactory but does not possess the elasticity and durability of silk when finished.

Since model airplane silk has many of the characteristics of aircraft cotton fabric, it will benefit the scale modeler to understand something of the procedure followed in the fabric work of the aircraft industry. Many of the tricks and details of covering used in the aircraft industry can be adopted to advantage in the detailed scale model field. The aircraft industry in over 30 years' experience in fabric work has developed no significant shortcuts. It still remains a long process to turn a piece of cloth into a taut, mirror-smooth durable surface. Many model fans are unaware of the fact that the Howard aircraft, for example,

(Turn to page 68)



Longitudinal striping emphasizes fuselage length



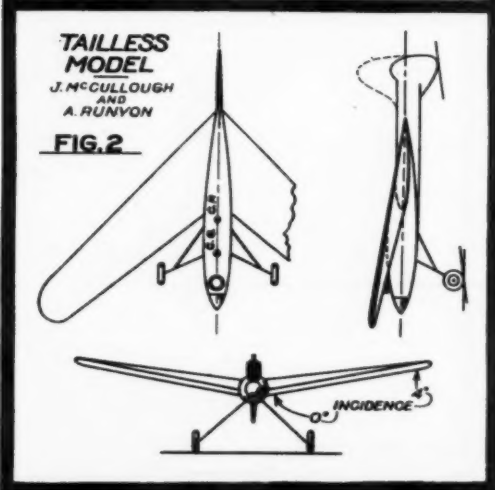
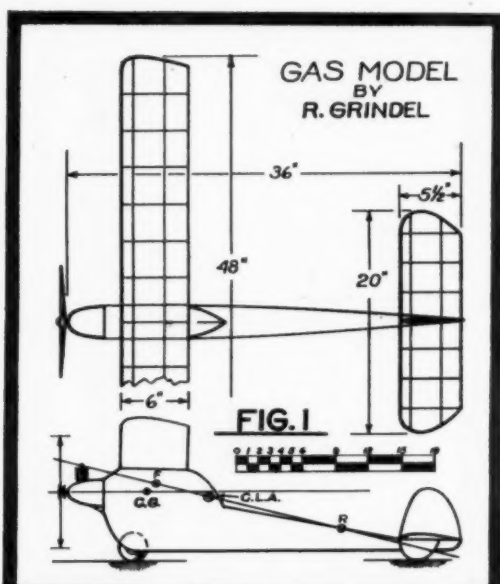
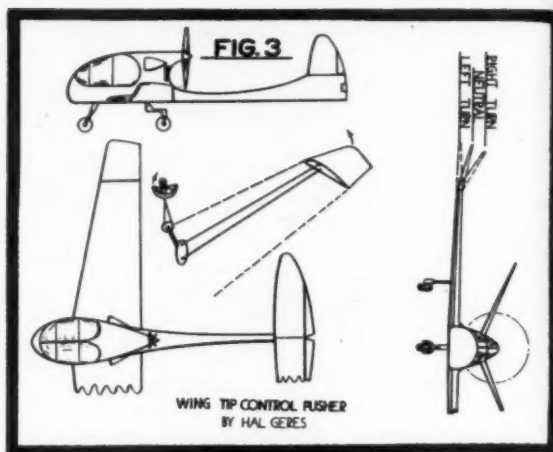
Silk covering with 15 coat finish calls for sturdy construction



The final lustre of the finish depends upon smoothness of surface

DESIGN FORUM

by CHARLES H. GRANT



WHILE man was learning to fly during the 1800's, there were two schools of thought concerning the approach to the flight problem. One (of which Samuel Pierpont Langley was a prominent advocate) was the conception that a full scale airplane should be built inherently stable like a free flight model; stability being built into the airplane so that in normal flight the plane itself would recover from displacements or resist them so they would have no effect upon the attitude and direction of flight. Control by the pilot constituted guiding the airplane to the right or left, up or down, through some suitable means. With this idea as a basis, Langley built a number of large power driven models which flew successfully for more than half a mile. Obviously, to fly without a pilot these models were inherently stable.

The next remaining step was merely to build the plane larger so it would carry a pilot to guide it. This he did, but unfortunately through no fault of the airplane's aerodynamic design it was wrecked on launching when one of the wires caught in the launching apparatus. Because of lack of funds Langley was never able to prove his contention that an inherently stable airplane could be built and flown merely by guiding it.

The second school of thought attempted to bypass inherent stability, and to maintain stability in flight and guide the airplane by means of controls operated by the pilot. Here the only problem was to build an airplane capable of rising into flight; after that the pilot would not only guide it but would make necessary corrections when it was displaced from normal flight. This second course seemed much easier, and many gliders were built in order to establish an airframe or structure capable of flight.

Montgomery and Lillienthal were the two chief glider experimenters before the Wrights. The Wrights powered their glider with a gasoline engine and attempted free flight. Unlike Langley's airplane, however, their machine was unstable and continuous correction through controls had to be made by the pilot to keep it right side up. In fact, anyone who has flown an old Wright Class B airplane really learned to fly—he did not merely ride in an airplane with the controls in his hands.

Flight, having developed through this second line of approach, naturally progressed along this line in the years that followed. Designers since then have thought chiefly of controlling an airplane rather than making it inherently stable and then guiding it. The demand for high speed, rather than safety through inherent stability, has also been largely responsible for this. Of course there have been many airplanes built which are extremely stable, but these were developed through modification of the second means and by improving the stability step by step of an original prototype design. In fact, many of the ways of producing stability in aircraft were first incorporated in free flight models and later adopted by full scale designers. This is true in almost every instance where stability of full scale airplanes has been improved.

Only under the necessity of designing stable airplanes for average civilian pilots have full scale airplane designers increased inherent stability of aircraft so that it is unnecessary in such cases for the pilot to stabilize the plane through controls as well as guide it. Since the Wrights, model builders (Turn to page 48)

FLYABOUT

by ELBERT J. WEATHERS

Build this flying scale model which has the proportions to make it a real performer

HERE is a well designed pre-war American lightplane that lends itself admirably to model building. It was in the same category as the 40 hp Piper Cub, being of the same general dimensions and performance. The *Flyabout* had ample room for two people and a puppy—so stated Aircraft Mechanics, the manufacturer. Two powerplants were available: the Continental A40 of 38 hp, and the Szekely of 45 hp, as reproduced on this model. A few specifications covering the Szekely powered type are:

Wingspan	37 ft. 9 in.
Wing loading	5.51 lbs. per sq. ft.
Net Weight	590 lbs.
Climb rate	700 ft. per min.
Overall length	21 ft. 7 in.
Power loading	21.8 lbs. per sq. ft.
Service Ceiling	13,000 ft.
Cruising speed	75 mph
High Speed	93 mph

The scale of the model is 1/20 full size. All balsa used should be of firm texture unless otherwise specified.

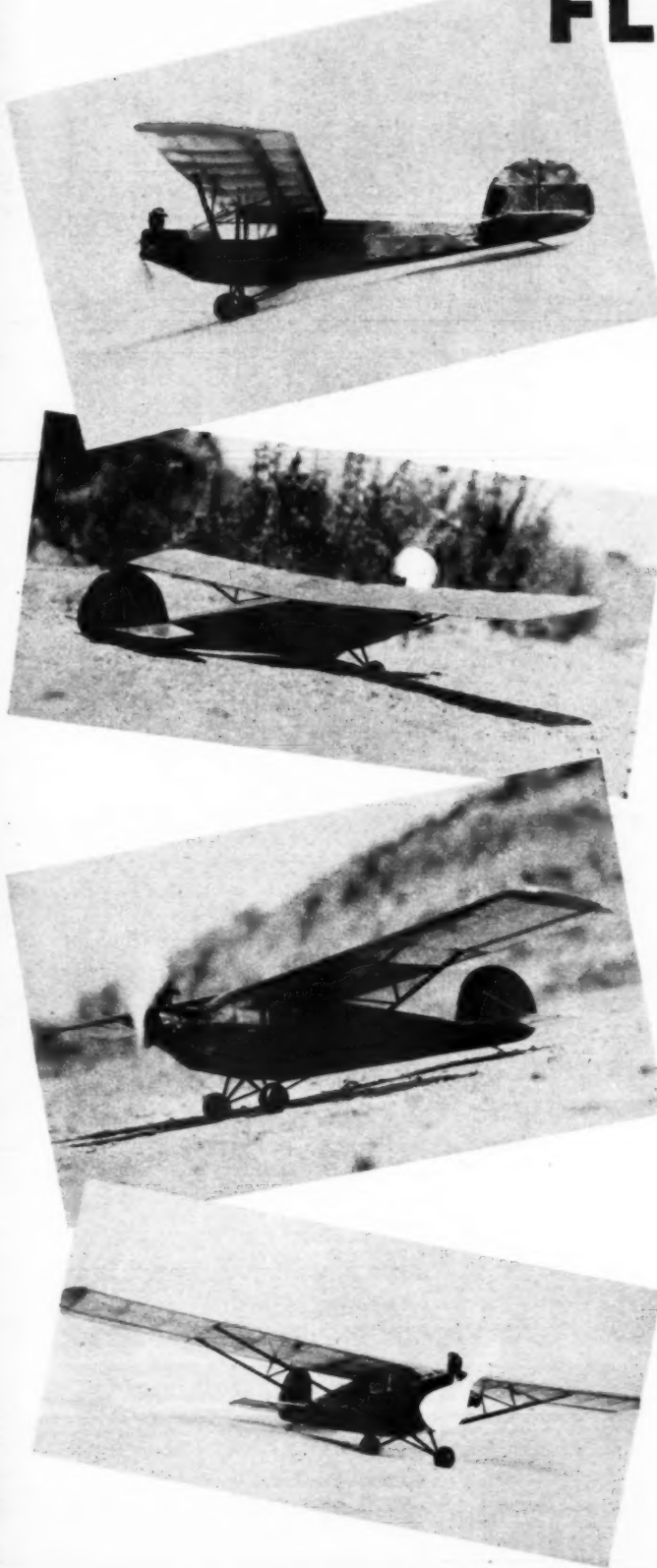
FUSELAGE—Begin by making the two side frames (shaded on drawing). Use 1/16" sq. and 1/16" x 3/32" for these. 1/16" x 1/8" stock is required for front portion of the lower longerons. Assemble the two frames in the usual way, first installing the cross-braces under the wing position. Notice that a few of the upper cross-braces, of 1/8" sq. balsa (between nose and rear of cabin), are set low to allow passage of the rubber motor. When the fuselage frame is completed to this point, cut out the required formers from 1/32" sheet balsa. Cement each in their respective positions. The 1/32" x 1/16" stringers should now be put in the nose as well as the single stringer which runs along the center on the bottom.

Cover these areas with 1/64" sheet balsa, using three separate pieces in covering the bottom as shown. After cutting the rear rubber hook bulkhead to shape, bend the rear rubber motor hook from No. 15 piano wire and insert in the bulkhead, following with the placing of the unit in the fuselage frame at rear as shown.

The nose block, of medium-hard balsa, is made next. It is simply cut to shape, plan and side views, and the resulting corners rounded off. Before cementing it against the fuselage frame, drill a hole for the propeller shaft to accommodate No. 15 piano wire. The front bearing is a dural aircraft type rivet, drilled for the same wire (running fit), and sunk in the nose block with cement in a counter-drilled hole.

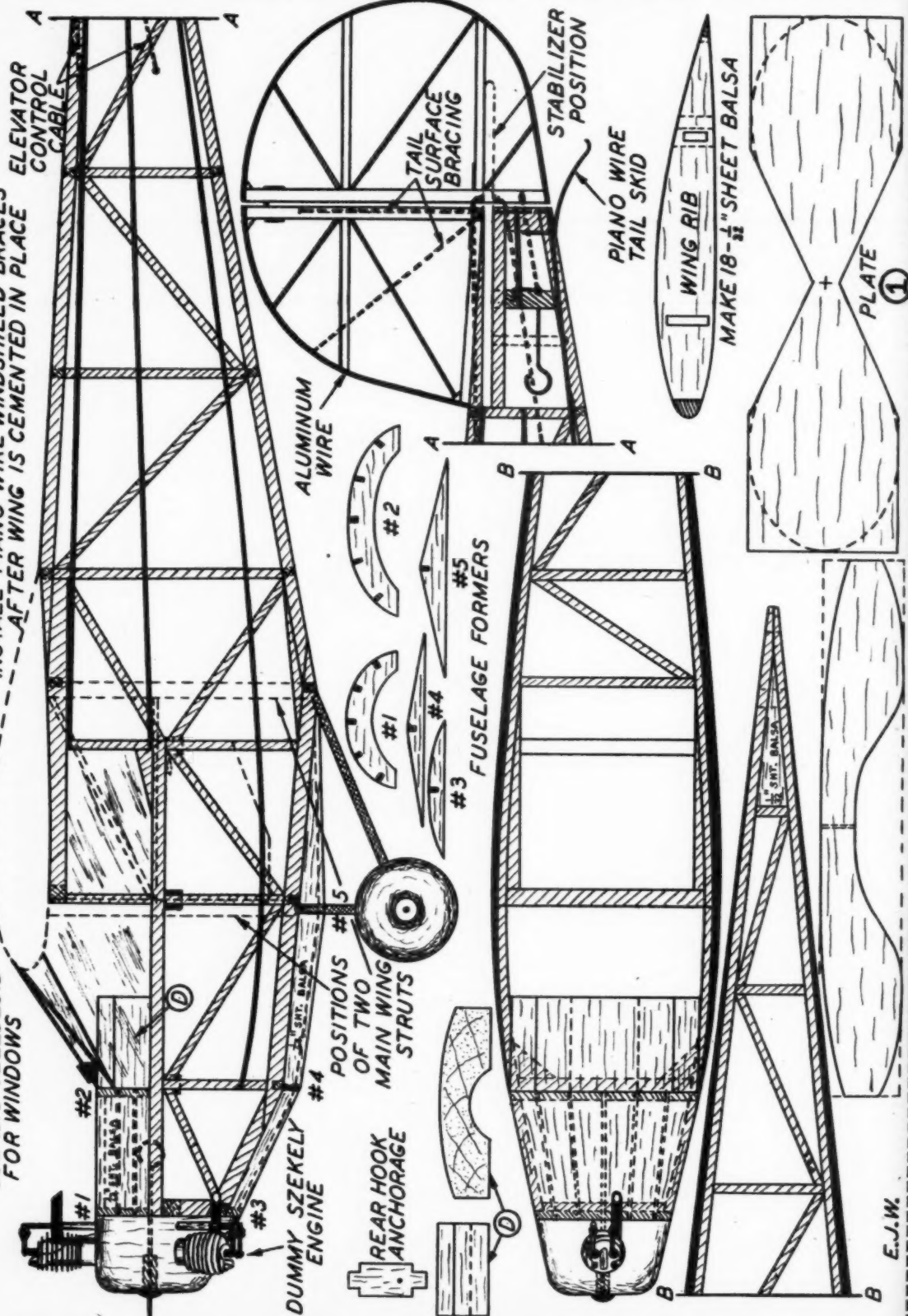
The dummy Szekely engine can now be made and cemented in place. Each of the three cylinder units are identical, being built up with small bits of balsa. Wrap each with wire or thread to represent the cooling fins. The exhaust stacks and tappet gear are merely lengths of balsa dowel assembled with cement. The two valve springs on each

(Turn to page 85)

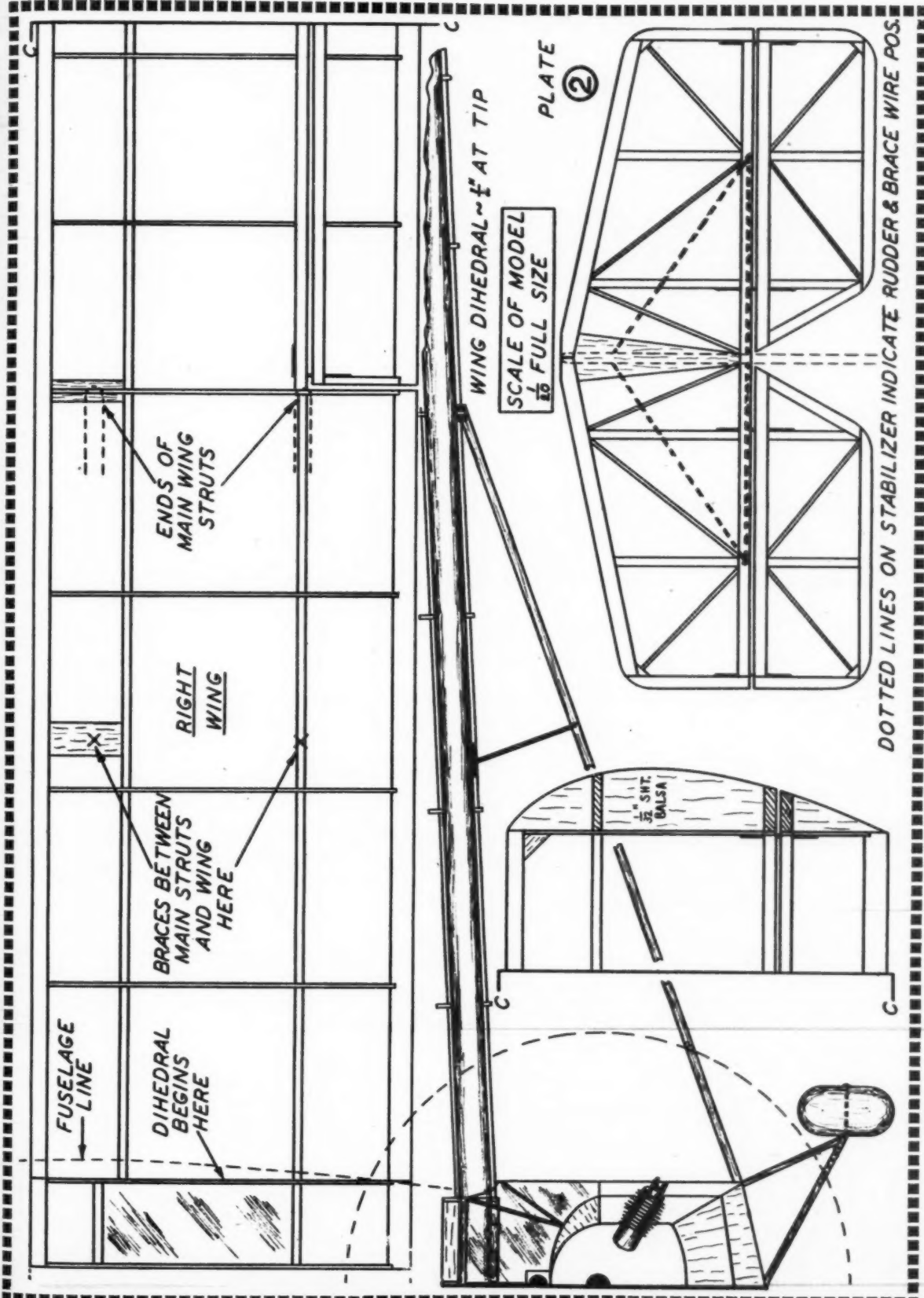


USE .010" CELLULOID
FOR WINDOWS

INSTALL PIANO WIRE WINDSHIELD BRACES
AFTER WING IS CEMENTED IN PLACE



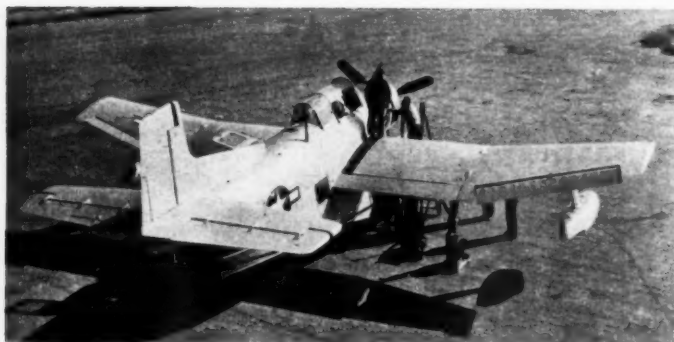
E.J.W.



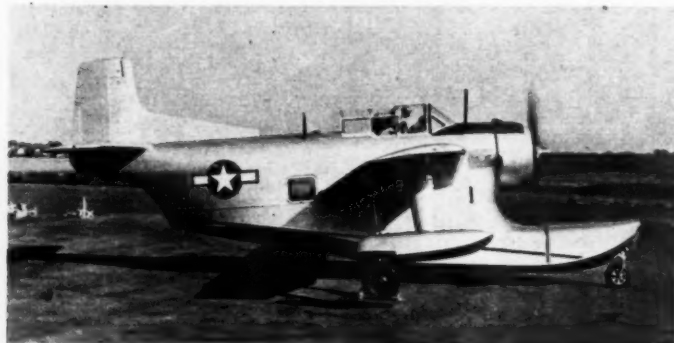


PLANE ON THE COVER

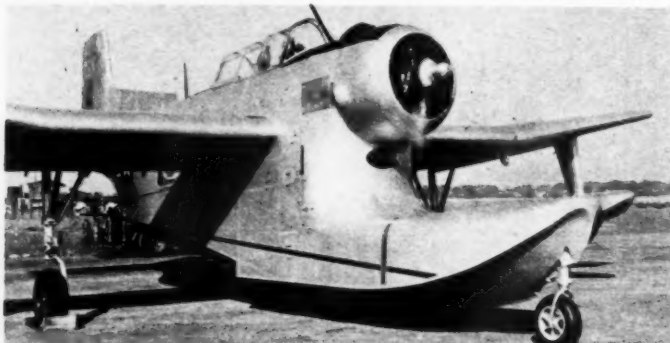
The XJL-1 shortly after takeoff
with the wheels partially folded



The figures give a good idea of the size of this new Navy amphibian



Extraordinary depth of fuselage shows clearly in this side view



A closeup which will give the detail hounds plenty to work with

COMBAT aircraft may win wars, but a powerful lot of the winning is often done by the lowly "yard craft" of our aerial fleets. The trainers, transports and "train" craft are as essential to aerial warfare as the fighter and bomber, and on hundreds of occasions the arrival of a strategic repair part in the nick of time moved the victory closer. "For want of a nail" was a time-tested philosophy in cavalry days, but "for want of a bolt" proved just as true in World War II in which aerial battles were often won or lost on an airstrip in the Pacific or a desert base long before the squadron ever took off. That was the wartime role of the much maligned "utility" aircraft of Naval Aviation in World War II, and many's the fighter pilot who will say "Bless 'em" as he recalls the arrival of a "windjammer" in the nick of time.

In peacetime the "J for Utility" often was painted on the rudder of any aircraft, regardless of type, that had grown old in the service and had been placed out to pasture, to serve out its enlistment as an errand boy. Once sleek multi-engine patrol planes of the mid-thirties became "utilities" during the late thirties when the newer patrol-bombers came into service. Utility squadrons from coast to coast flew everything from Grumman fighters to Ford tri-motors in those days.

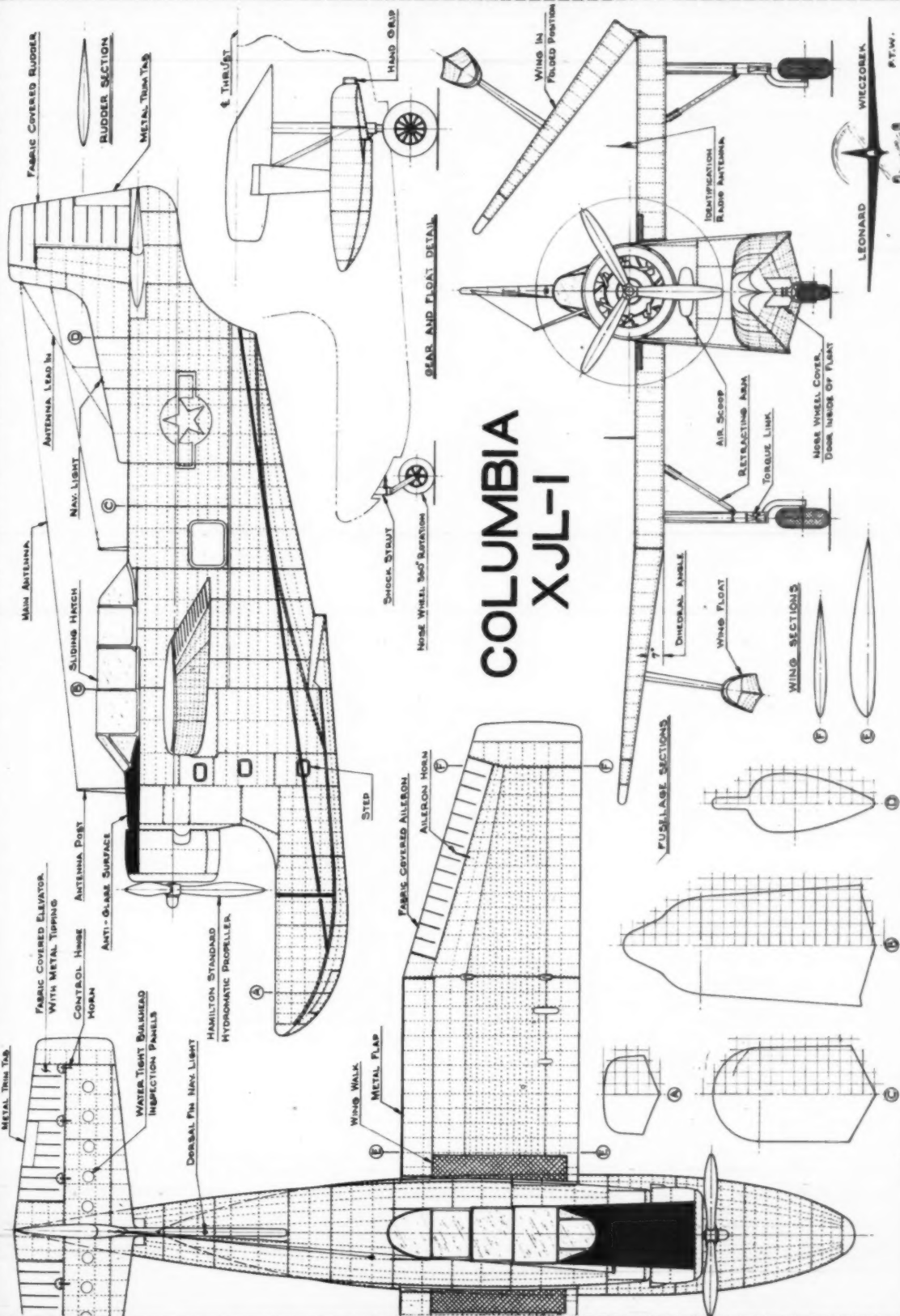
But the war changed all that and the word "utility" quickly became a carefully defined and exclusive term. For with Pearl Harbor came a new and vital function for the utility plane. Designed-for-the-purpose utility planes came into being and existing types went into quantity production. One of the best of these was the Grumman J2F Duck, a biplane amphibian which has always constituted one of the most challenging design problems in the aircraft industry book. Grover Loening pointed the way in the early twenties when he fashioned his famous "flying shoehorn," which solved the basic problem of the single engine amphibian: "Where will we put the engine?" And when in 1929 one of his most talented engineers, Leroy Grumman, resigned to start his own firm, the "flying shoehorn" idea migrated from Loening but with his blessing and (many say) financial support.

The Grumman XJF-1, a cleaned up Loening OL, stretched its wings for the first time in 1931 and announced the rebirth of the idea. The Navy took to the idea to the tune of over 300 of them in the following decade, with continuing improvements.

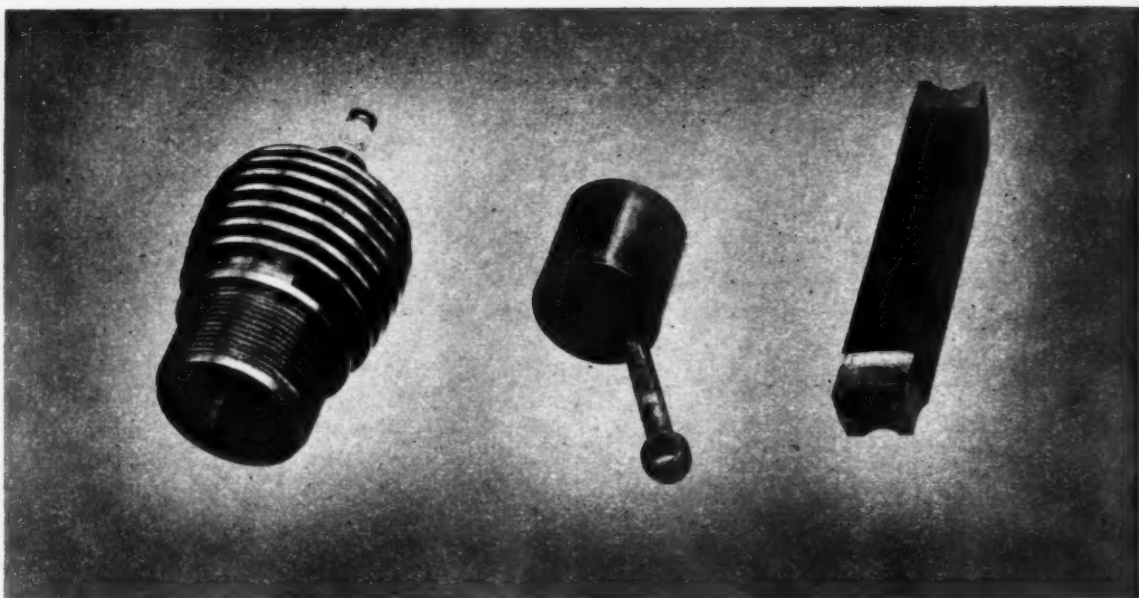
And Pearl Harbor made little difference to the "Duck"; the Navy wanted more of them! There were few engineers more surprised and chagrined by this order than Leroy Grumman, who was already at work on a single seat fighter eventually to become famous as the Hellcat! The Wildcats were flowing down Grumman production lines, the new Hellcat was being made ready for quantity production, and "Jake" Swirbul was begging and borrowing used steel to expand the Grumman plant—still the Navy wanted more

(Turn to page 77)

r-
 he
 n-
 al
 and
 a-
 he
 e-
 nt
 in
 on
 ng
 he
 r-
 and
 n"
 in
 as.
 ss
 and
 its
 ti-
 he
 w-
 ty
 ng
 in
 rd
 and
 a
 e-
 to
 o-
 m-
 as
 ng
 k.
 ly
 he
 he
 al-
 to
 id-
 ng
 131
 vy
 em
 m-
 he
 re
 a-
 ho
 ter
 he
 c-
 dy
 bul
 nd
 are



COLUMBIA XJL-1



At left is completed cylinder; center, assembled piston and connecting rod; at right, a special tool used to form balls on the connecting rod

SIMPLEX 25

PART TWO

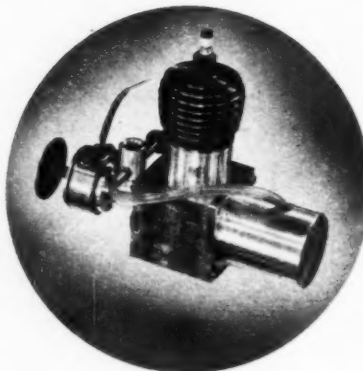
by LOUIS GARAMI

Concluding instructions for building this fine little motor

HAVING covered construction of most of the basic parts of our two cycle motor, we have left only the cylinder, piston and connecting rod to be made plus a few finishing touches on other parts that were previously set aside. Let us start this month, therefore, with the most complicated part—the cylinder.

CYLINDER—This part is made of Meehanite, which is a cross between cast iron and steel; this material has a great advantage over steel when used for cylinders or pistons. Ninety percent of the pistons used in production engines are of Meehanite. If either piston or cylinder is made of this metal the fit between the two can be very close, in fact actually tight, without danger of scoring the surface or "picking up." This is a feature of all forms of cast iron which is porous and therefore can be compressed slightly. However, cast iron is not very strong when machined down to a thin section, as it should be in the case of model gas engines, and air bubbles sometimes make it full of small holes. Meehanite is much stronger and more uniform while retaining the good properties of cast iron; also it can be heat-treated to the hardness of steel if desired.

Mount the $1\frac{1}{4}$ " diameter Meehanite so that you have about 2" sticking out of the chuck; more overhang than this is undesirable because for fin cutting the stock must be as rigid as possible. Turn



the piece down to $1\text{-}3/16$ " diameter for the full length; then turn the first half inch down to the size of the full thread, or $55/64$ ". Now cut the thread on this portion very slowly, taking light cuts especially toward the finish because one-thousandth of an inch looseness in the thread feels as if it were $1/32$ ". At the shoulder, cut in with the parting tool just deep enough to clear the thread and about $1/16$ " wide. The same thing can be done at the start of the thread—this will allow the cylinder to screw snugly into the crankcase.

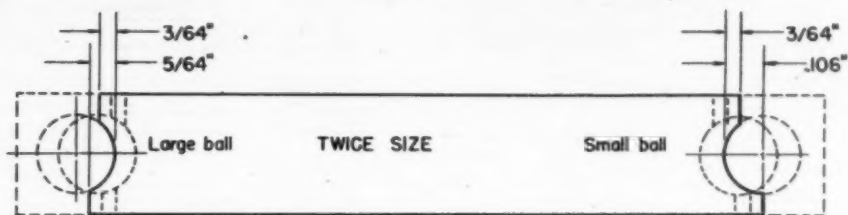
To make the fins, a $1/16$ " wide parting tool is used which should be able to go in about $3/8$ " deep. If it is possible to move the compound rest freely with the tail stock so close, the Meehanite should be center drilled so that the tailstock center can be brought into use for extra support. On most lathes this is possible. The single fin below the exhaust port should be $3/64$ " thick; the space next to it for the port is $1/8$ " wide and the diameter at this point is $55/64$ " (same as the full

thread). Naturally you will have to make two cuts with the parting tool to get the $1/8$ " width. Next come seven fins each $3/64$ " thick, making a fin and a space about $7/64$ " altogether. The depth should be such that the diameter at the base of each fin is $3/8$ " at each of the six spaces. The two small steps at top of the head should not be cut at this time as we must keep the piece strong until the hole is bored out and finished.

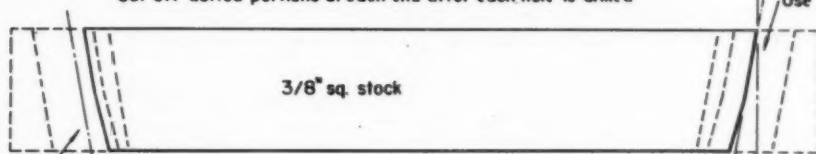
Drill a hole about 2" deep into the piece with a No. 4 drill (.209) which is the tap drill for the $1/4\text{-}32$ thread of the sparkplug. Now use progressively larger drills up to $3/8$ " to remove most of the metal before the boring tool is employed. Depth of the cylinder bore is $1\text{-}21/64$ ". This and other measurements of the cylinder should be kept quite close because the compression ratio and the location of the bypass and exhaust depends on them; inaccuracy may lead to trouble later. A few thousandths here and there will not matter, but more than that may add up into a sizeable discrepancy. The hole should be finish-bored to .687" with a boring tool whose cutting edge is almost parallel to the surface so that it will take a shaving cut.

If you have a tool-post grinder, set it in place and take a cut of about a half thousandth through the bore with a $3/8$ " or $1/2$ " diameter wheel and run it back and forth 4 or 5 times without changing the adjustment. This will suffice to glaze up the cylinder surface and give it fine wearing quality. If you have no tool-post grinder, make a short cast iron or brass lap and work over the surface using the finest lapping compound you can obtain. Do not overdo this as the cylinder metal gets charged up with compound so that it will emit this material from its pores long after it has been thought to be clean. In any case when the surface looks smooth, wipe the barrel and the lap clean

(Turn to page 80)



Cut off dotted portions at each end after each hole is drilled



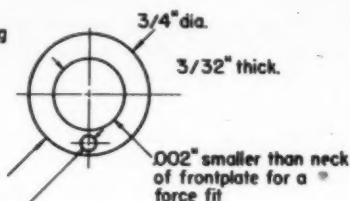
Use F (.257") drill

File flat on both sides.

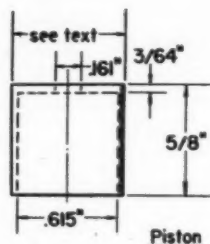
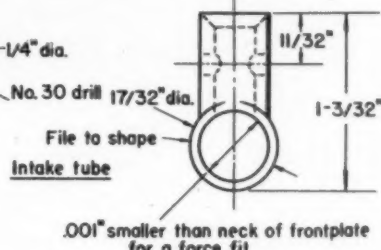
Taper with center drill

10° angle of both holes

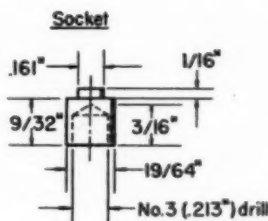
Timer mounting ring



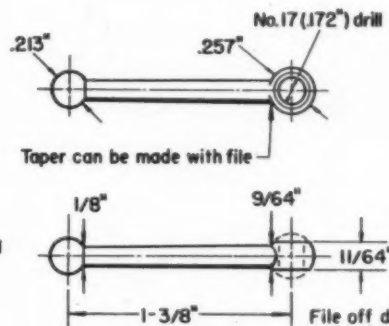
No. 46 (.081) drill and tap 3-48 after assembly



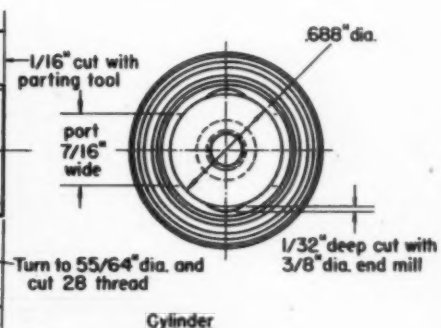
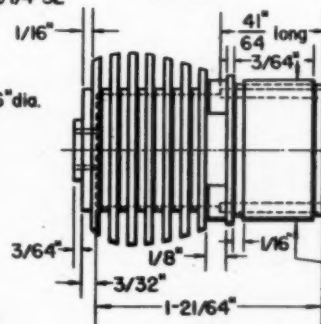
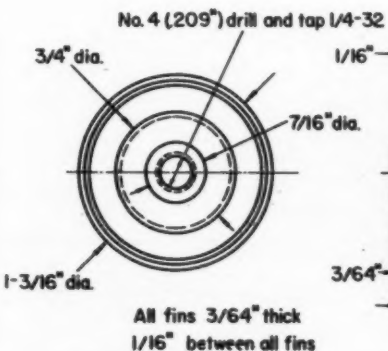
Piston



Round fins to a nice contour



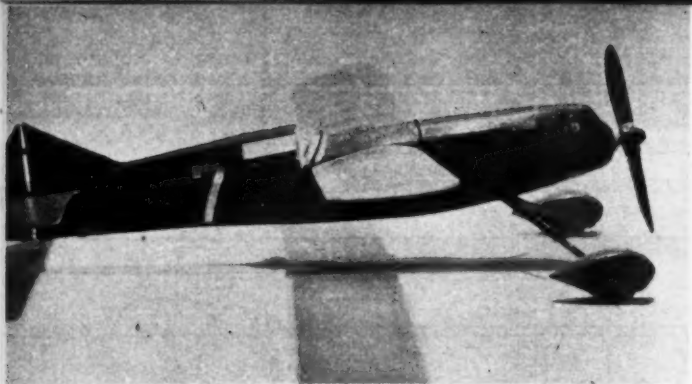
Connecting rod



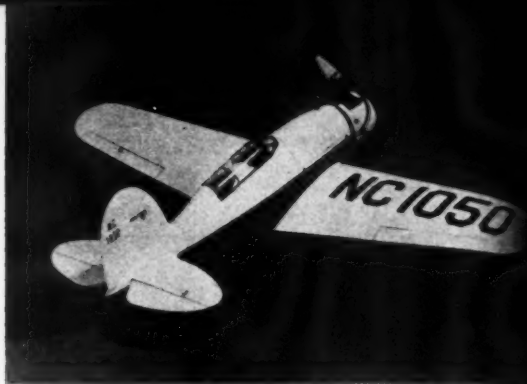
Cylinder

CONSTRUCT FROM DIMENSIONS ONLY, DO NOT SCALE FROM PLAN

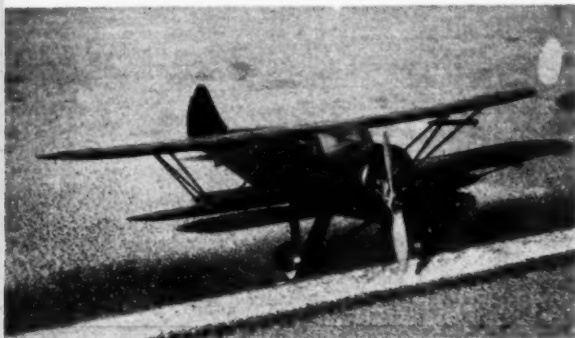
JAY THOMAS HOLMES



No. 1 This rubber speed ship by Alan S. Reed is realistic as well as fast



No. 2 Note finish on this Sirius by J. C. "Madman" Yates



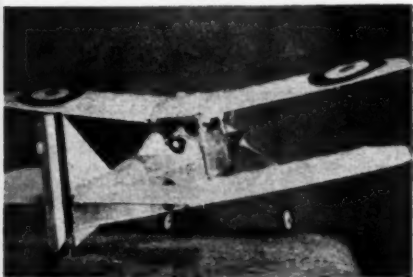
No. 3 Victor G. Mathern built this Waco U-Control ship



No. 4 Fokker D8 from Sweden by Rigo Lindgren has diesel motor



No. 5 Super Buccaneer sent from England by R. F. Fowler has been rebuilt for the coming season



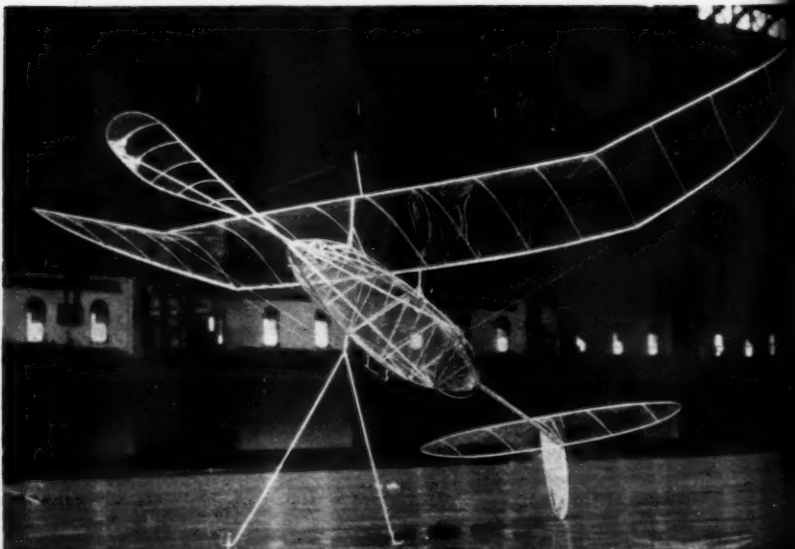
No. 6 Free flight gasie SES by John E. Cleland
No. 7 Franco B. Cipres built this biplane in Mexico

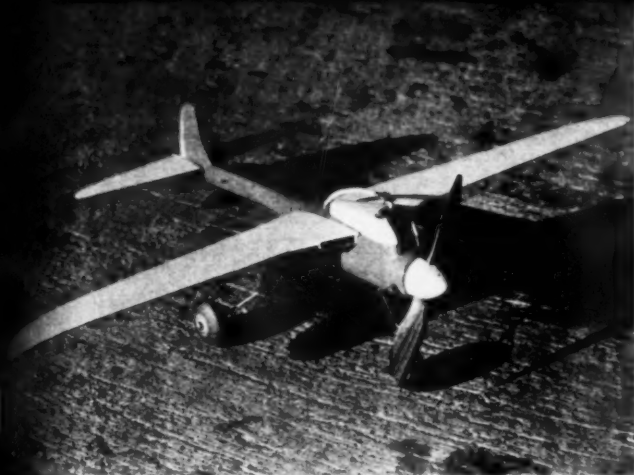


AIRWAYS

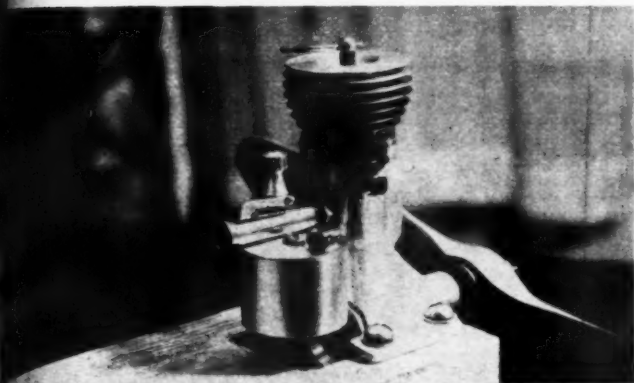
News of model airplane experimenters from all over the world

No. 8 Class B indoor cabin ship won AMA record of almost 18 m. for Pete Andrews

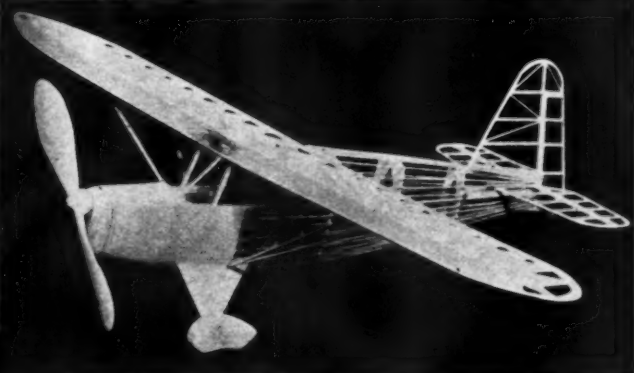




No. 9 All-time favorite ship of Ray Daniel is this Class A control liner



No. 10 Highly successful .199 diesel was designed and build by John Mosca



No. 11 D. F. Galasneau sent shot of Rearwin Speedster before covering

No. 12 Two Ohlsson 23's power this beautiful B25 by Warren R. Watson



AIRWAYS PICTURES. A letter from David Blodgett of Carthage, N. Y., tells of his great interest in "Airways" and suggests that more material for this feature might be sent in if a small prize were offered for pictures that are printed. To reassure Dave, and those other readers who have not heard of our offer, may we say that each correspondent who sends in a picture used on this page will receive a free year's subscription to **MODEL AIRPLANE NEWS** (present subscribers will receive an additional 12 issues).

This policy has been in effect for some time and has resulted in our receiving far more photos than we can use. Unfortunately, many of the pictures sent are totally unfit for reproduction—so we request readers to study carefully the remarks on preparation of these shots on pg. 29 of the August 1946 issue.

While the free subscription is a good break for readers in this country, it is much more so for those who reside in other parts of the world. Many of our foreign readers tell us that even though they have the money, it cannot be sent to us because of currency restrictions. We hope such readers will take the hint and send in plenty of good shots of their latest work.

THE BREWER AWARD. As many readers have undoubtedly heard, the Frank G. Brewer Trophy—awarded annually to the individual who has contributed the most during the year in the furtherance of air age education for young people—was given last December to Frank E. Sorenson, a member of the teaching staff at the University of Nebraska. In a recent communication, Mr. Sorenson stresses that air age education in this country has progressed rapidly since 1941—when it was, except in isolated instances, very sketchy—to the present when it has "definite implications for every teacher and every pupil."

He also points out that the nation must overcome the problem arising from the fact that young people must be educated in the implications of the air age by teachers who have never experienced air travel. He concludes with the thought that education in the field must accompany the technical advancements now coming so rapidly.

EAST-WEST CHALLENGE. While no new plans have been formulated for this great control line battle, a development has entered the picture that probably needs a little comment.

We received a letter from Edward L. Brown of the *Torque Jockeys*, Urbana, Ill. who feels rather badly that the Middle West was not included in the challenge issued by the Eastern flyers. He takes this as a personal slight to the modelers in his area.

Let us hasten to assure Mr. Brown, and spokesmen for other groups or areas, that such a thought never entered the minds of Tom Herbert and his Eastern cohorts when the challenge was issued.

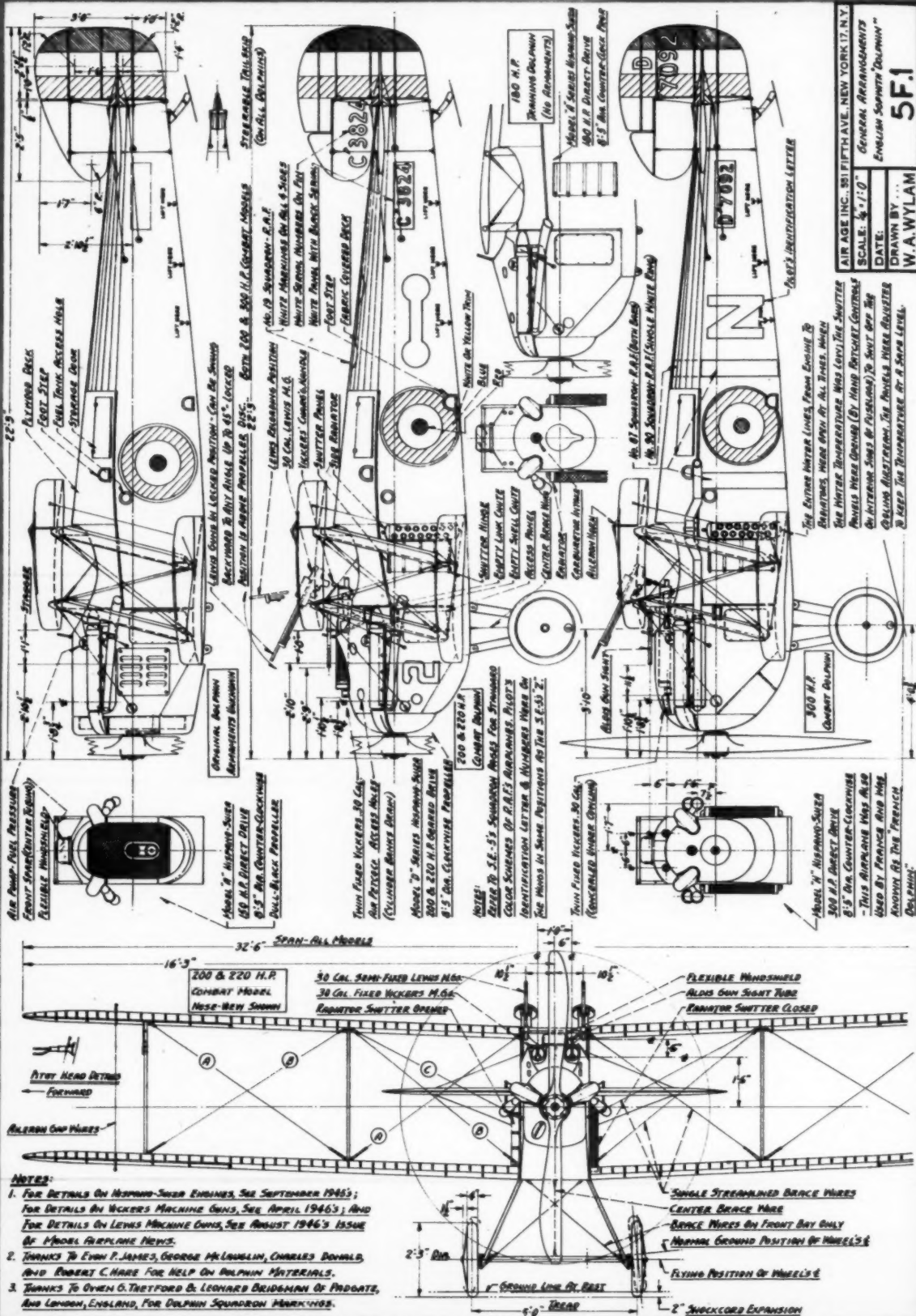
The background for this challenge has been building up for a year or more and has been based on styles of flying, types of pylons used, the art of "whipping," and other problems of control line flying. Actually, though termed an East-West match, the scheduled contest is between rather small areas. In the East, most of the interested parties are located within less than 100 miles of New York City; in the West the hot flyers involved are concentrated in the lower half of California. Thus it would probably have been wiser to define the groups more accurately.

Events were building up to a good climax last summer—what with claims, counterclaims, strongly expressed doubts and so on, until with the Nationals approaching everyone expected a fine clash between the two groups on the neutral ground of Kansas. However, the big battle did not ensue because the Easterners were not fortunate enough to have a local "Ohlsson and Rice Express." For this and other reasons they couldn't get to Wichita. Their non-appearance was at once construed by some zealous but unthinking Western supporters as due to a wide yellow streak. It was to prove this untrue that the challenge was issued.

So we ask all flyers in other areas not to feel they have been slighted, but to watch the coming event as interested spectators from the sidelines. After all, the East-West Challenge fly-off will be followed by the Nationals; it is quite possible that the winner at the Nationals may be a Midwesterner, a Southerner, or perhaps a Canadian. So let our East-West groups have their fun, then the other groups can go gunning for the winner at the Nats!

1947 NATIONALS. While the time and place of the Nationals for this year have not been definitely announced at the time this is written, it is now official that the Nats as well as the preliminary meets to be held locally will be

(Turn to page 60)



AIR AGE INC., 951 FIFTH AVE., NEW YORK 17, N.Y.

SCALE: $\frac{1}{4}'' = 1'-0''$

DATE: _____

DRAWN BY: _____

W.A. WYLAM

GENERAL ARRANGEMENTS
ENGLISH SOPHIST "COLLAPSE"

5F!

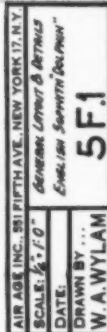
135

DRAWN BY ...
W. A. WYLAM

to keep the temperature at a safe level.

KNOWN AS THE "FRENCH"
"DELPHIN."

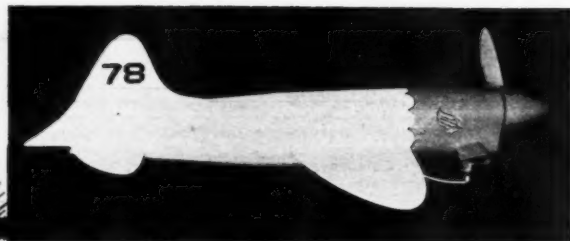
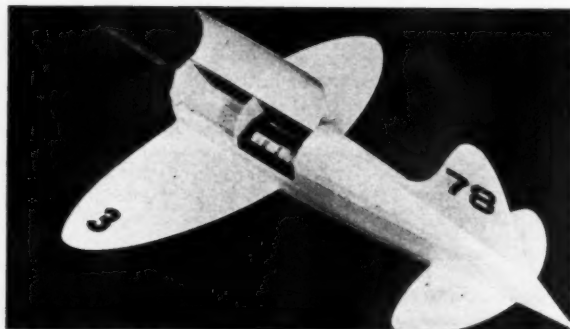
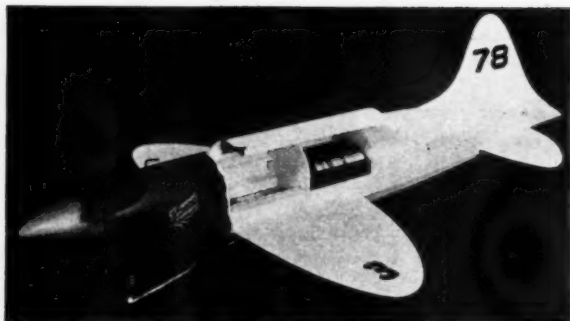
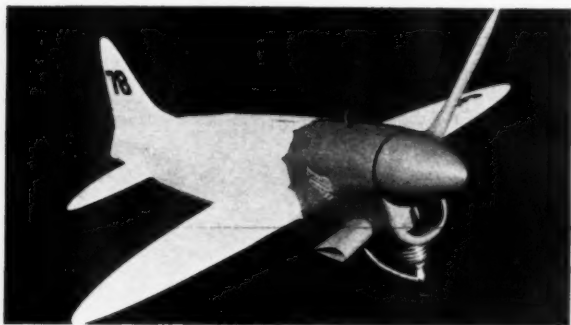
N



POLE CAT



by FRANK EHLLING



THE Pole Cat was a product of our experience gained in U Control, but it was not flown the normal way. It had all its time on the end of a line anchored to a 40 foot pole set in the ground. In this way the ship was flown round and round without any danger of a crackup; and here we learned that a one blade high pitch prop was the real thing.

The partly cowled engine was the best bet because it enabled us to cool the engine and streamline the accessories. Thin wing and tail surfaces were used because they gave least drag. The entire ship was polished to reduce drag as much as possible. The large aluminum cowl to gain access to the ignition is very welcome as it provides accessibility to the batteries with little trouble.

The first model of this ship was never flown. However, the second one was built to the same plan and it had a chance at this new method of flying. Everyone who saw her perform was on the waiting list for the original plan.

To start this Cat, enlarge the plan to full size using a pair of dividers; this should be done with care because the whole ship's performance depends on it. After the plan is drawn to required size, lay out the crutch atop the plan and cement the engine bearers in place. Now cement formers in; start at the rear and work forward. Make sure to get them all in their correct places and to cement them well.

The tail block is now fastened in place. Add the cowl blocks to the fuselage; however, cement them in place lightly as they are to be removed and hollowed out after they are shaped. The job can be simplified by making the spinner and cementing in place. Now, using the firewall (former A) as a guide and carving from it to the spinner, form the cowl to correct shape. The large exhaust stack helps the engine expel burned gases, a gain in engine performance over the drag set up by it; the stack can be made of sheet brass or tin from a can.

The tail surfaces should be of hard balsa; they can thus be made thin and yet will not warp when doped. After they are cut out and sanded to shape, cement in place. Set both at 0° to the thrust line.

Choose a straight-grained piece of stock for the wing and cut it to the crosssection shown. A good job will result if you take it easy and cut a little at a time. Be careful to sand the surface with the grain, otherwise you will cut the grain. Give the wing several coats of wood filler, being sure to sand between coats and ending with No. 9-0. Now cement the wing to lower part of the crutch between formers A and C with 0° incidence.

Cement stringers to the formers. They should be of very hard balsa—1/16" x 1/8"—or pine, which prevents the paper from sagging between formers. By wrapping a pencil with sandpaper and sanding lengthwise between stringers when smoothing the formers, the covering will not be able to adhere to them and a much neater job will result.

The ignition can now be installed. A timer is optional—the ship can fly and fly on its pole and no one will get tired. However, install the ignition equipment so as to get the ship to balance at 50%

(Turn to page 58)

NOTE

USE HARD BALSAL

- WING -
1/4" SHEET

- STABILIZER -
1/8" SHEET

BALSA
CRUTCH 3/16" X 3/8"

BASS
PROP

BASS 3/8" SQ.

CEMENT

- RUDDER -
1/8" SHEET

BALSA
BLOCK

1/16" X 1/8"

STRINGERS OMITTED
FOR CLARITY

PLYWOOD

BALSA COWL

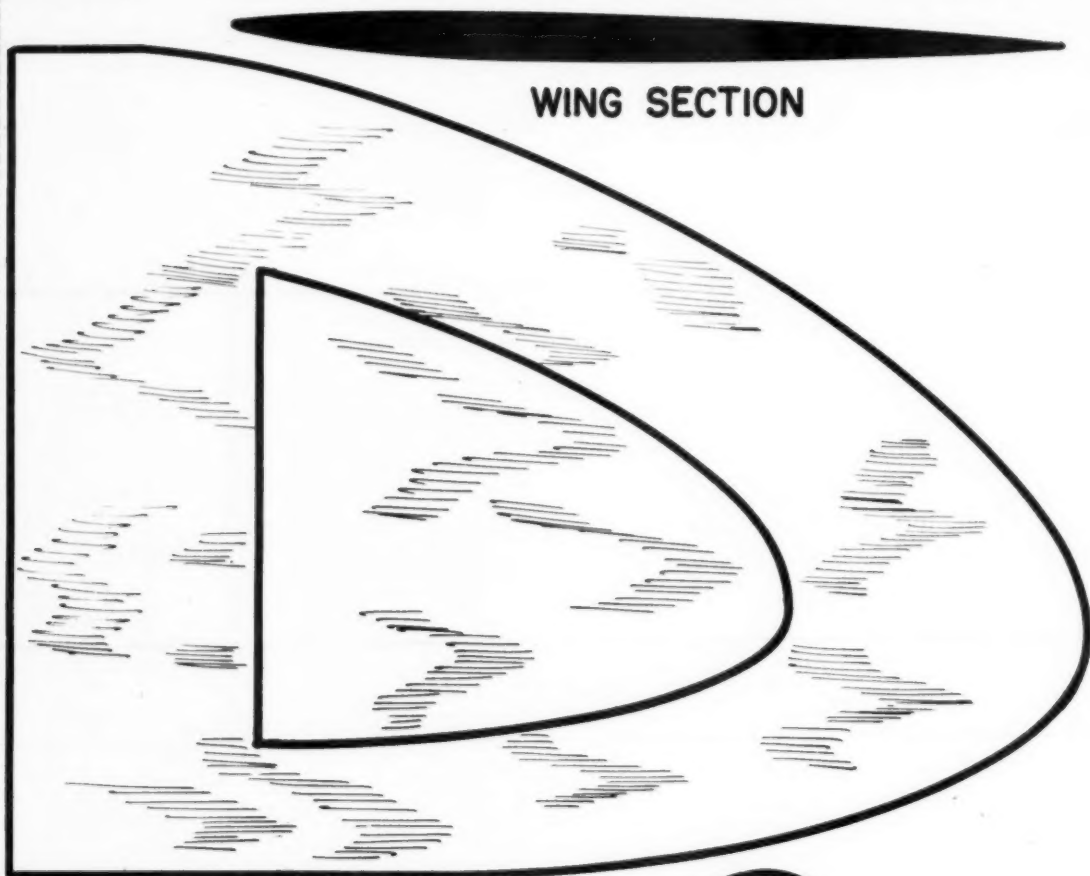
CUT COWL
TO FIT ENG.

COIL

BATTERY

1-1/4" F 2" E 2-1/2" D 2-1/2" C 2-1/2" B 2-3/4" A

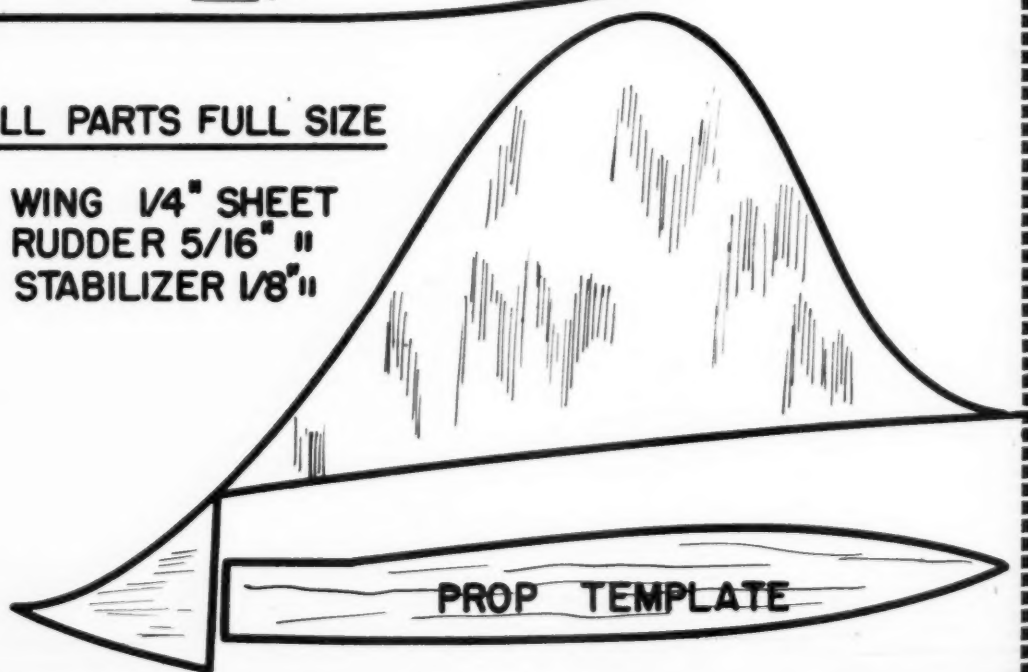
SCALE 1/2" SIZE



WING SECTION

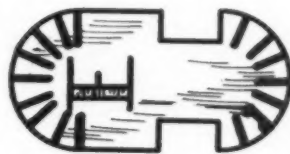
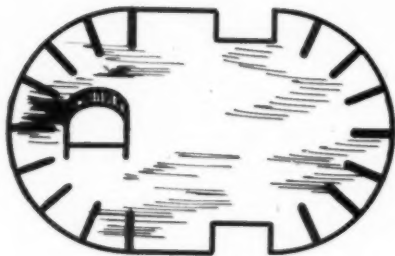
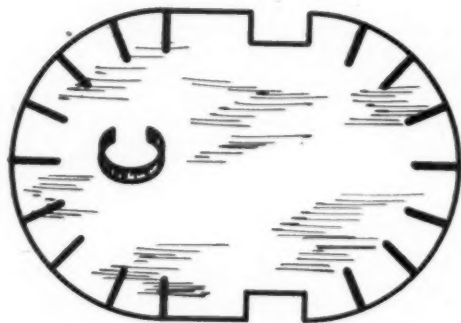
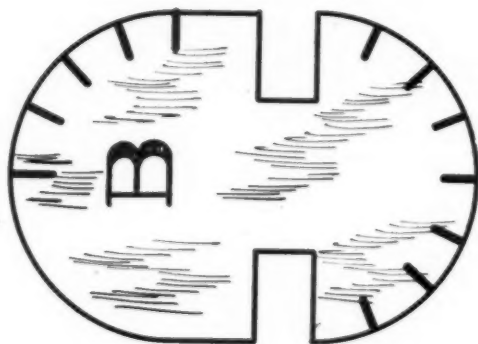
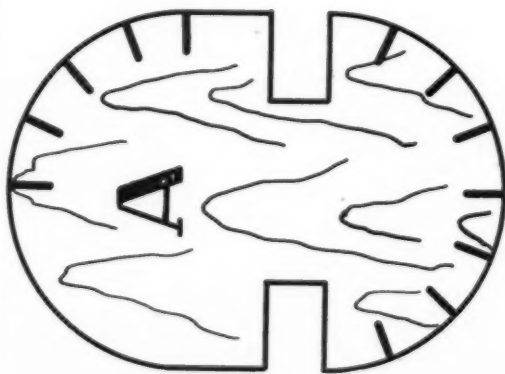
ALL PARTS FULL SIZE

WING $\frac{1}{4}$ " SHEET
RUDDER $\frac{5}{16}$ " "
STABILIZER $\frac{1}{8}$ " "



PROP TEMPLATE

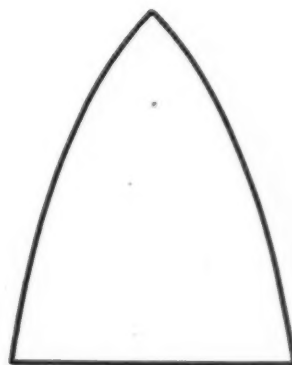
F.V.B.E.



1/8" PLYWOOD

UNLESS NOTED CUT
ALL FORMERS FROM
3/32" BALSA.

ALL PARTS FULL SIZE



SPINNER TEMPLATE

F.V.B.E.

WORLD WAR I



by ROBERT C. HARE

DURING the morning of August 21, 1918 a flight of five planes from the 35th Bavarian Staffel began a usual patrol of its part of the Arras district. As the Staffel's fighters climbed through the cloudless blue sky, a battle to the death was raging on the ground below. Canadian troops were beginning a drive that was to be one of the decisive operations of the First World War. Air activity of course was high. Allied aircraft seemed to be everywhere—patrolling, photographing, spotting artillery and reporting German movements back to corps headquarters.

Actually the 35th Staffel's leader, Oberleutnant Stark, had little interest in what was going on below. His concern was how to effectively carry out his patrol in a sky full of planes, the majority of which wore the bright red, white and blue insignia of the R.A.F. What worried Stark most as his flight approached the Front was a British type he did not immediately recognize. To him it appeared strangely huge for a single seater; very ugly compared to an S.E.5. The new type seemed to have been bashed on its upper wings by some unseen force.

But German intelligence had informed staffel leaders like Stark well. As the new British ships moved in overhead preparing to dive on his little flight, he saw for the first time their pronounced negative stagger, recognized them immediately as Sopwith Dolphins, a type new to his area. Drawing his men into a tight circle, Stark waited for the attack. Seconds later the Dolphins came screaming down in single file, each firing a long burst as it came, then zooming back to its original altitude. The Dolphin pilots preferred to try out their new mounts cautiously, the usual practice during an initial operational flight with a new type. To this neither Stark nor his men objected because their intelligence had reported some quite startling details regarding performance and characteristics of the Dolphin. What the 35th Staffel group saw was enough to convince them that reports had been correct; that here indeed was a formidable new opponent.

Doodles and Visibility

The Sopwith Dolphin was an interesting example of a design which defied tradition in order to achieve an end result. Primary consideration was visibility for the pilot, a characteristic that had been only partly

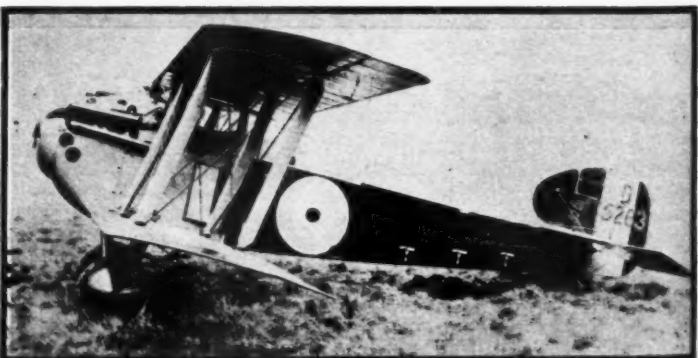
(Turn to page 74)



(Top) Sopwith Dolphin with extra twin centersection guns (Above) SF.1 at the front



(Above) Prototype had nose radiator, Camel rudder. (Below) Note stock model changes



LATEST MODEL MOTORS

ENGINE CONSTRUCTION DATA

	Class	Displacement, Cu. In.	Cylinder	Cylinder Attachment to Crankcase	Cylinder Head	Cylinder Head Attachment to Cylinder	Crankcase	Piston	Connecting Rod	Crankpin Bearing	Wristpin Bearing	Crankshaft Bearing	Number of Cyl. Per Crankshaft	Crankshaft Admission Valve	
Cobley-Walton	A	.147	Steel	Screws	Alum. Alloy	Screws	Alum. Alloy, Die Cast	Steel	Alum. Alloy	No Bushing	No Bushing	No Bushing	4		
Arden "199"	A	.198	Steel, Alloy	Threaded	Alum. Alloy, Turned	Threaded	Alum. Alloy, Die Cast	Steel, Cr. Moly	Steel, Cr. Moly	No Bushing	Ball and Socket	Bronze or Ball Bearing	3	Rotary, Shaft Type	
Cameron "23"	B	.230	Iron, Gray	4 Screws	Alum. Alloy, 178-T	6 Screws	Zamak Alloy	Iron, Gray	Zamak Alloy	No Bushing	No Bushing	Alum. Alloy, 178-T	3		
Bullet	B	.278	Steel	Screws	Alum. Alloy, Die Cast	Screws	Alum. Alloy, Die Cast	Mechanite Iron	Alum. Alloy, Die Cast	Bronze Bushing	No Bushing	Bronze Bushing	2	Rotary, Disk Type	
Pierce	B	.297	Steel	Screws			Alum. Alloy, Die Cast	Steel					2	Rotary, Shaft Type	
Torpedo Special	B	.298	Steel, Alloy	Screws	Alum. Alloy, Die Cast	Screws	Alum. Alloy, Die Cast	Mechanite Iron	Alum. Alloy, Die Cast	Bronze Bushing	No Bushing	Bronze Bushing	2	Rotary, Shaft Type	
K & B Torpedo	B	.299	Steel	4 Screws	Steel	4 Screws	Alum. Alloy, Die Cast	Mechanite Iron	Alum. Alloy, Die Cast	Bronze Bushing	Bronze Bushing	Bronze Bushing	2	Rotary, Shaft Type	
Vivell "33"	C	.351	Steel, Bar Stock	2 Screws	Alum. Alloy	4 Screws	Alum. Alloy, Sand Cast	Iron, Cast	Alum. Alloy	Bronze Bushing	Bronze Bushing	Bronze Bushing	2	Rotary, Shaft Type	
Stenmoor Bobcat	C	.421	Alum. Alloy, Die Cast, Steel Liner	4 Screws	Alum. Alloy	Integral	Alum. Alloy	Iron, Cast	Alum. Alloy, Die Cast	Bronze Bushing	Bronze Bushing	Bronze Bushing	4		
Mighty Midget	C	.451	Steel	Threaded	Alum. Alloy	6 Bolts	Die Cast	Steel, 2 Rings	Steel	Cr. Moly	Cr. Moly	Bronze Bushing	3	Rotary, Shaft Type	
Madewell "49"	C	.488	Steel, Alloy	Screws	Alum. Alloy, 178-T	Screws	Alum. Alloy, Perm. Mold	Iron, Cast	Alum. Alloy, Die Cast	Bronze Bushing	Bronze Bushing	Bronze Bushing	2	Rotary, Shaft Type	
Vivell "Forty-Niner"	C	.489	Steel, Bar Stock	2 Screws	Steel	Integral	Alum. Alloy, Die Cast	Iron, Cast	Steel, Tool	No Bushing	No Bushing	No Bushing	2	Rotary, Shaft Type	
Vivell "Twin"	C	.509	Steel, Bar Stock	4 Screws	Steel	Integral	Alum. Alloy, Sand Cast	Iron Alloy	Alum. Alloy	No Bushing	No Bushing	Ball Bearing	2	Rotary, Shaft Type	
Anderson Spitfire	C	.604	Alum. Alloy, Die Cast, Iron Liner	4 Bolts	Alum. Alloy, Die Cast	6 Screws	Alum. Alloy, Die Cast	Iron Alloy	Alum. Alloy, Forged	Bronze Bushing	No Bushing	2 Ball	3	Rotary, Shaft Type	
Hamad	C	.605	Alum. Alloy, Bar Stock, Mee. Liner	6 Through-Bolts	Alum. Alloy, Bar Stock	6 Through-Bolts	Alum. Alloy, Sand Cast	Mechanite Iron	Dural, Hardened Bar Stock	Bronze Bushing	No Bushing	2 Ball	2	Rotary, Rear Shaft-Type, Impeller	
Thunderbird	C	.645	Steel	Screws	Steel	Integral	Alum. Alloy, Die Cast	Alum. Alloy, Die Cast, 2 Rings	Alum. Alloy, Die Cast	Bronze Bushing	Bronze Bushing	No Bushing	2 Ball	3	Rotary, Disk-Type, Ball Bearing
Orr "65"	C	.647	Sand Cast, Mechanite Liner	Bolts	Sand Cast	Screws	Sand Cast	Alum. Alloy, Sand Cast, 2 Rings	Alum. Alloy, 245-T	No Bushing	No Bushing	Mechanite Bushing	2	Rotary, Shaft Type	
Orwick "64"	C	.647	Steel, Alloy	Bolts	Alum. Alloy, 245-T	6 Bolts	Alum. Alloy, Sand Cast	Nickel Steel	Alum. Alloy, 245-T	No Bushing	No Bushing		2-Bearing		
Viking "65"	C	.648	Alum. Alloy, Die Cast, Steel Liner		Die Cast										

by EDWARD G. INGRAM

by EDWARD G. INGRAM

Motors listed herein have reached the market since those covered in our December 1946 issue

INFORMATION about the construction, dimensions, and performance of 19 new makes and models of engines for model planes is presented in this article, which is supplementary to the one published in the December 1946 issue in which data on 51 current engines were shown. Hardly a month goes by but what at least one new model engine is introduced. Some manufacturers, however, have had difficulty in getting into active production because of business conditions and materials shortages. This probably explains why it has been difficult to obtain detailed information about certain recently announced engines.

Designed to operate on high octane aviation gasoline, outstanding features of the Orr 65 racing engine (a product of a Michigan manufacturer) include high power output to weight, the provision of

a ball-bearing rotary disk valve—an innovation in model engine design—and an alloy steel crankshaft supported on two ball bearings. The manufacturer states that the rating of 85 hp at 13,500 rpm was obtained through comparative tests with other engines, use of propellers of various pitches, and a tachometer, and that additional data will be supplied when further tests are completed.

The engine has a bare weight of 13-1/2 oz. Contributing to the high power output is the high compression ratio of 12.50 to 1, and the provision of two rings on the aluminum alloy piston to minimize gas leakage and insure high compression.

It is reported that after a four hour test at full power the engine showed no sign of failure or falling off in output. Like several other makes of model engines intended for use in racing cars and

boats, as well as for model planes, sand castings are used extensively in construction of the Orr 65, this method of fabrication being employed for the cylinder, cylinder head, crankcase and piston. While engines made from sand castings tend to be slightly heavier than those constructed from die castings, the manufacturer of the Orr appears to have aimed at keeping the weight low through compact design, the crankcase in particular being unusually small for an engine that is somewhat larger in displacement than most Class C engines. Low engine weight is not so important in engines for model cars and boats where the main object is to attain maximum power to piston displacement, but it is a desirable characteristic for airplane engines when it can be achieved without loss of efficiency and reliability.

Model	Class	Displacement, cu. in.	Bore, in.	Stroke, in.	Weight, lb.	No. of Cylinders	Cylinder Bore and Stroke, in.	Brake-Horse Power (hp)	Cylinder Compression Ratio (C/R)	Rated Horsepower	Revolutions per Minute at Rated Horsepower	Maximum Brake Horsepower	Revolutions per Minute at Maximum Brake H.P.	Max. Brake H.P. per Cu. In.	End Use	Recommended Propeller, in.	Revolutions per Minute with Recommended Prop.	Type of Mount
Coleman-White	A	.147	3.50	1.49	1		.562 x .388	1.00	6.50	1/10	8,500	.....	.....	.....	.....	.....	.....	Radial
Ardon "100"	A	.198	4.16	1.31	1		.685 x .625	.90	9.00	1/5	10,000	.....	.....	.....	.....	.....	.....	Radial
Cameron "23"	B	.230	5.75	1.58	1		.625 x .750	1.30	7.00	1/5	9,300	.....	.....	.....	.....	10	5	Radial
Bulldog	B	.278	6.50	1.47			.700 x .625	.80	9.00	...	.....	.....	.....	.....	.....	11	8	Beam
Flare	B	.287	.....	.....	1		.....	.....	.....	1/5	.....	.....	.....	.....	.....	.....	.....	Beam
Turbo Special	B	.308	7.75	1.63	1		.711 x .700	1.05	11.00	...	.....	.....	.....	.....	.....	12	6	Beam-Radial
K & B Torpedo	B	.399	7.50	1.81	1		.725 x .725	1.00	7.00	.357	8,500	.....	.....	.....	.....	11	8	Radial
Vivall "25"	C	.261	7.25	1.29	1		.765 x .763	1.00	.....	1/5	9,000	.....	.....	.....	.....	11	6	Beam
Stinson Debonair	C	.423	7.50	1.11	1		.813 x .812	1.00	8.00	1/4	9,500	.....	.....	.....	.....	11	8	Beam
Mighty Midget	C	.451	7.25	1.00	1		.875 x .750	.80	8.00	1/6	12,400	.....	.....	.....	.....	9	9	.....
Madwell "48"	C	.480	9.00	1.15	1		.891 x .703	.80	5.24	.00	18,000	.....	.....	.....	.....	12-13	6-8	Beam
Vivall "Forty Niner"	C	.489	7.50	.96	1		.889 x .844	.80	.....	1/4	10,000	.....	.....	.....	.....	11	8	Beam
Vivall "Twin"	C	.540	14.00	1.84	2		.726 x .887	.95	.....	3/8	9,000	.....	.....	.....	.....	12	8	Radial
Anderson Spitfire	C	.604	11.00	1.14	1		.927 x .975	.90	6.00	1/2	10,000	.....	.....	.....	.....	12	8	Beam
Hassad	C	.605	18.00	1.88	1		.905 x .940	1.04	13.00	.....	.....	1 1/3	19,900	1.88	1.00	9	13	Beam
Thunderbird	C	.645	13.00	1.30	1		.988 x .875	.90	6.00	.....	.....	.....	.....	.....	.....	10	10	Beam
Orr "65"	C	.647	13.50	1.30	1		.927 x .927	1.00	12.50	.85	13,800	.....	.....	.....	.....	.....	.....	Beam
Orrick "84"	C	.647	12.00	1.16	1		.927 x .927	1.00	10.00	.754	10,800	.....	.....	.....	.....	12	8	Rad. (S.M. Extra)
Viking "65"	C	.648	11.00	1.00	2		.812 x .625	.77	.....	1/2	8,500	.....	.....	.....	.....	.....	.....	Radial

ENGINE DIMENSIONS AND PERFORMANCE DATA

One component of the *Orr* engine that is not sand cast is the connecting rod, which is 24S-T aluminum alloy forging with an Oilite bronze bearing mounted in the lower end. The cylinder, which is bolted to the crankcase, is supplied with a Meehanite iron liner. Both bore and stroke of the cylinder are 15/16 in., which makes the displacement .647 cu. in. The cylinder head is lapped to the cylinder to insure a good fit, and is attached with screws.

A special impeller for supercharging is a feature of the Class C *Thunderbird*, which is built in Arizona by Scott Motors Inc. As an additional aid to high volumetric efficiency, dual intake and exhaust ports are provided; combined width of the two exhaust ports is 1-3/8 in. The supercharger impeller is swaged and induction brazed to the special shaft-type rotary valve located at rear of the crankcase. The unit is driven by means of an extension pin on the crankshaft which engages with the impeller. The cam for operating the breaker points is ground on the valve shaft. It is pointed out that because of the high speeds at which model engines run the direct driven impeller operates at about as high rpm as the geared supercharger impellers of large aircraft engines. For example, when a Pratt & Whitney 1200 hp aircraft engine with a supercharger impeller gear ratio of 7.15 to 1 is operating at the cruising speed of 2000 rpm the impeller is turning 14,300 rpm. It is stated that using special fuel the *Thunderbird* will turn 11,000 to 12,500 rpm, and an estimated 14,000 rpm when the model is airborne, so that the speed at which the impeller operates is about the same as that of the large aircraft engine impeller.

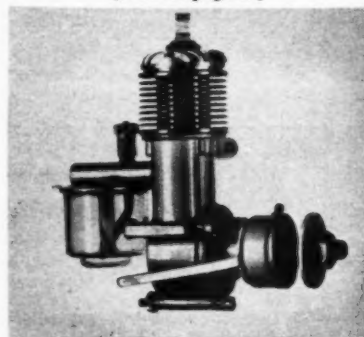
It may be pointed out that the meaning of the term "supercharging" as used in connection with model two-cycle engines

must be regarded as somewhat narrower than that applied to four-cycle engines. Since the combustion chamber intake and exhaust ports of a conventional two-cycle engine are open at the same time, it is obviously impossible to force into the cylinder a charge greater than the volume of the combustion chamber, for the excess fuel mixture would pass out of the exhaust port. Forced induction, however, may aid in delivering a nearer to maximum charge where the charging time interval is short (that is, at high engine speeds) by increasing the flow of the fuel mixture through passages that are necessarily somewhat restricted. Increasing the crankcase compression ratio should produce a similar result, that is, increase the volumetric efficiency, but the degree of crankcase compression that can be attained in this way is limited by constructional considerations. In both two- and four-cycle engines an impeller aids in diffusing the fuel mixture.

The *Thunderbird* is provided with a metal instead of a plastic tank to permit operation on an alcohol-ether mixture. Both the spark and mixture controls are located at rear of the engine for convenient operation. Steel is used for the cylinder and, of course, for the ball-bearing crankshaft. The other important engine components are aluminum alloy die castings, including the piston which has two rings, and the connecting rod which has bronze bushings. The compression ratio is 6 to 1 and the engine weight 13 oz.

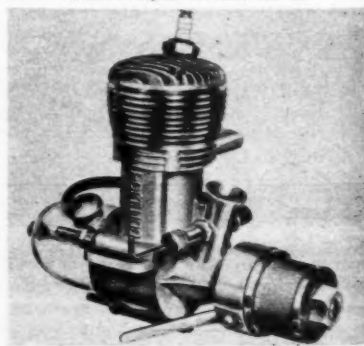
Described as a competition engine designed with one object, that of optimum performance, the *Hassad*, which has a displacement of .605 cu. in., is claimed to develop the remarkably high output of 1-1/8 brake hp at 19,900 rpm. Designed by Ira J. Hassad, it is stated to incorporate what is termed "resonic" timing, a feature said to have been developed

through laboratory research work, exhaustive trials and the cooperation of physicists. It is hoped some information about this timing principle and the (Turn to page 54)



This is the Cameron "23"

K & B Torpedo of .299 cu. in.



MOUNTING HIGH PITCH PROPS

by RAY RUSHER

THE majority of prop manufacturers shape a high pitch prop so that the hub is thin enough to fit dimension A, in No. 3 of drawing herewith, between the prop drive washer and the front washer under the crankshaft nut of most engines. The modeler who carves his own prop by the method described in July 1943 issue of MODEL AIRPLANE NEWS starts with a prop blank that is too thick for this dimension.

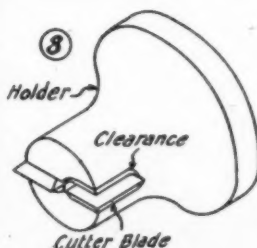
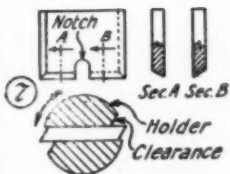
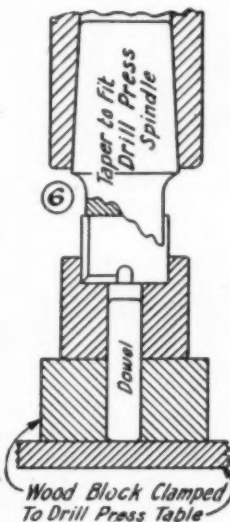
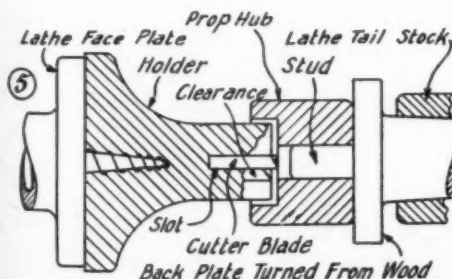
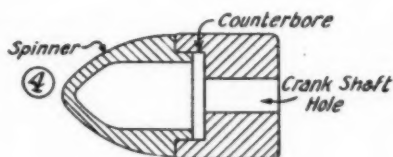
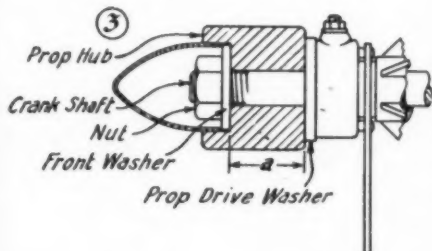
The usual remedy is to notch the hub as in No. 1. This weakens the hub considerably, however, and spoils fairing. A much better method is to counterbore the front of the hub so the front washer can be countersunk in the hub as in No. 3. The appearance and design are much better as will be obvious by comparing No. 2 with 1. This method also permits convenient use of a spinner of metal, or turned wood or balsa as shown in Nos. 3 and 4 respectively.

First secure a smaller front washer than the size usually furnished with the engine. An ordinary iron washer 3/4" in diameter for a 1/4" shaft is about right. Then proceed to make a special counterboring tool (see No. 8) to fit your lathe or drill press as shown in Nos. 5 and 6 respectively. The tool is merely a cutter blade and a holder for it is turned from wood, preferably maple. The holder has a slot in its working end to frictionally receive the cutter blade. The blade can be pinned or clamped in the holder, but a friction fit is satisfactory.

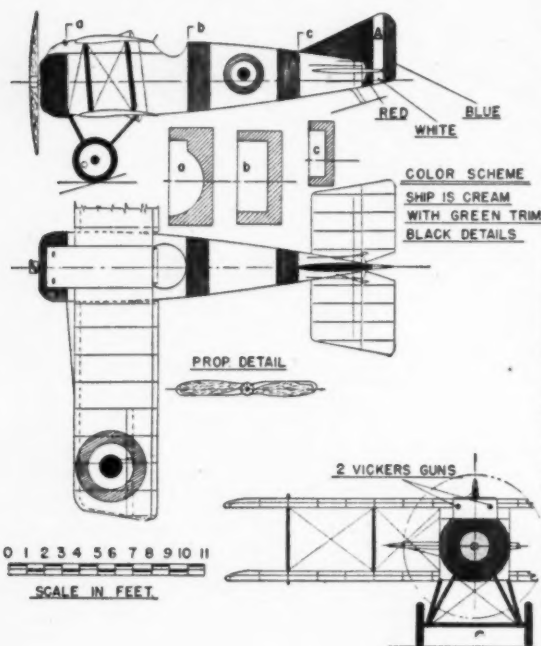
The cutter blade can be made in a few minutes from a 1/8" x 5/8" piece of strap iron, the length being 3/4" for a 3/4" diameter counterbore. Notch the center and file the ends and bottom as shown in No. 7 at an angle of about 30°. Force the blade into the slot of the holder.

When counterboring a prop, it should be accurately centered as by a stud turned on a back plate if you use a lathe, or a dowel in a hole drilled in a wood block if you use a drill press. To further insure accuracy, oscillate the prop through a 90° arc while counterboring and finish by turning it 180° and again oscillating it through 90° while counterboring. Use a stop to limit depth of cut so the remaining thickness of the hub will permit a full nut length of threads as shown in No. 3.

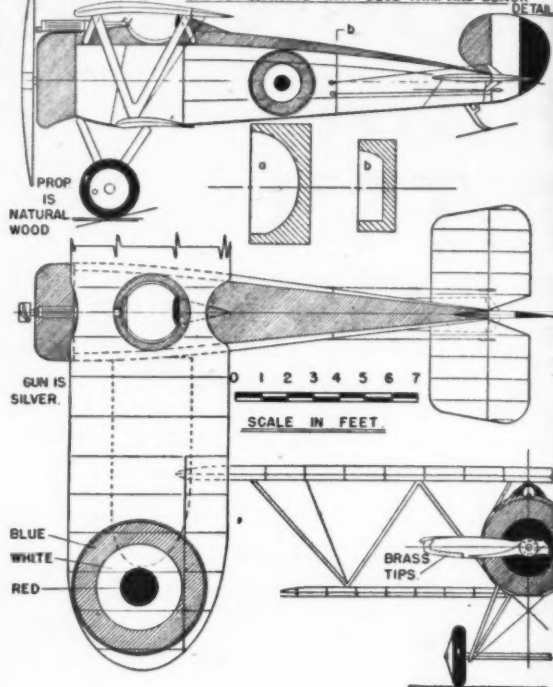
A counterboring tool of the type described works best when rotating 2500 to 3000 rpm. If the cutter edges are carefully honed it will counterbore two or three dozen props before requiring retouching with the hone. If made from cold rolled steel it will hold its edge longer, especially if it is case-hardened after honing. To finish the counterbore smoothly for varnishing after it is cut, a special sanding drum can be turned from a block of wood screwed to the face plate of the lathe. Both the end and the periphery of the drum have fine abrasive paper or cloth glued to them for finishing the counterbore bottom and its cylindrical portion.



ARMSTRONG-WHITWORTH "ARMADILLO" OF 1918
 THIS SHIP WAS POWERED BY A 220 H.P.-BR2 ROTARY ENGINE.
 IT WAS CAPABLE OF 140 MPH. AT 1,000 FEET

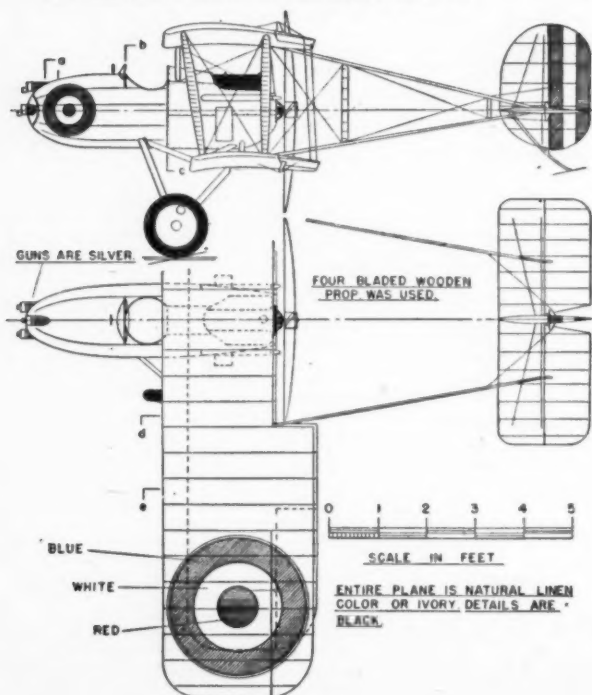


"AVRO SPIDER" - BRITISH FIGHTER OF 1919
 POWERED BY A 180 HP. BR. ROTARY. HIGH SPEED WAS 124 M.P.H.
 SHIP IS ALL WHITE WITH BLUE TRIM AND BLACK



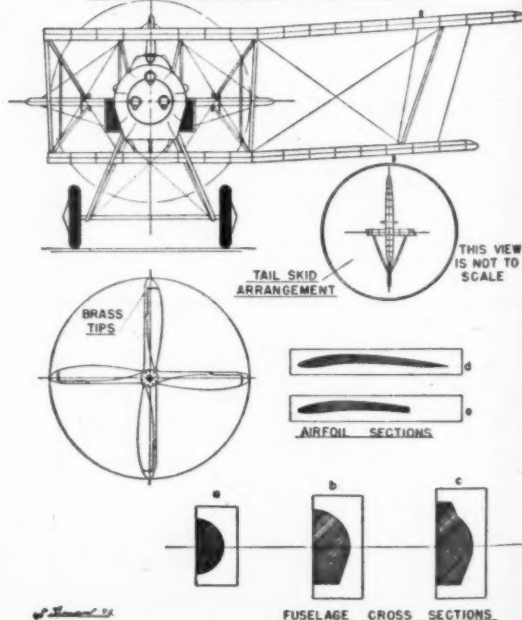
RARE SHIPS FROM WORLD WAR 1

BRITISH "VICKERS' VAMPIRE" PUSHER SCOUT OF 1917



DATA:

THIS AIRCRAFT WAS DESIGNED ESPECIALLY FOR TRENCH STRAFING. THIS PARTICULAR MODEL HAD THREE VICKERS MACHINE GUNS MOUNTED IN THE NOSE. IT WAS POWERED WITH A 200HP HISPANO SUIZA. MAXIMUM SPEED WAS 121 MPH



YOUR LOCAL DEALER

HAS THESE FAMOUS SCIENTIFIC MODEL KITS

"CYCLONE" Class "B" or "C" Scientific's "U-CONTROL" Champ!



\$4.95

Licensed under U.S. Pat. No. 2,292,416

Wingspan 36".
Length 28 1/2".
Kit includes
rubber wheels.



"ATOMIC"

\$3.50

Class
"B"

CONTROL-LINE
CHAMP
Designed by Nat'l
Champs
LEON SHULMAN

Kit includes rubber
wheels, full-size plans,
etc.

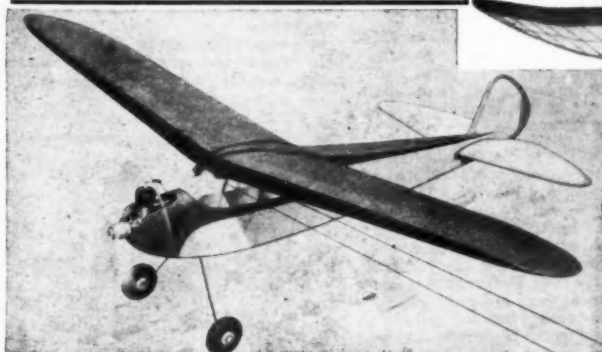
SHOWN
BELOW

"MERCURY Jr."

Can be flown as a "Free Flight" or "Control-Line" model.

Class "B" version of that nationally famous Class "C" Champ, the "Mercury." Wingspan 50". Length 36". Kit includes a pair of 2 1/2" rubber wheels, grade "A" balsa, easy-to-read plans, etc. Only

\$3.95



New!

ANOTHER 2-IN-1 GAS
KIT BY SCIENTIFIC!

The "GOOD NEWS"

FLY IT AS A "FREE FLIGHT" OR "CONTROL-LINE"



It's A Top Flight Scientific Value!

Wingspan 50". Length 34". Wing area 344 sq. in. Chord 9". Kit is complete, including a pair of 2 1/2" rubber wheels, grade "A" balsa, full-size, easy-to-understand plans, etc. SEE YOUR DEALER—it's only

\$3.95
CLASS
"B"

The "HUMDINGER" Class "B"



\$3.95
AT YOUR
DEALER

- Chord: 9"
- Wingspan: 52"
- Length: 39"
- Wing Area: 436 Sq. in.

It's a proven contest winner! Has a terrific rate of climb! Ever-so-easy to build, too! Complete kit includes rubber wheels, full-size easy-to-understand plans, etc.

SCIENTIFIC MODEL AIRPLANE COMPANY

"Dealers In All Principal Cities"

218-220 M-4 Market St., Newark 2, N. J.

MODEL AIRCRAFT CO. DELIVERS FAST!

FREE POSTAGE on all orders of \$3.50 or over!

FREE FLIGHT GAS KITS

Aero Champ	2.99
Air Foiler	3.99
American Ace 39-A	1.50
American Ace 54	3.99
Banshee	3.99
Bay Bridge Bomber	2.99
Bay Bridge Bomber	2.99
Bea A	1.99
Brigadier 8-58	3.99
Brooklyn Dodger	3.99
Buccaneer A-38	3.50
Buccaneer 48	3.50
Buccaneer B Special	3.99
Buccaneer C Special	3.99
Buzzard Bombshell	3.99
Coronet A or B	2.50
Custom Cavalier	19.00
Interceptor (Comet)	3.99
Jersey Javelin, A or B	3.99
Jimmy A	1.50
Little Chief A	2.99
Mercury C, E & F	3.99
Wing	8.50
Whisper 8-52	3.50
Pacer 8	3.99
Pacer C	3.99
Piper Cub, 8-52 A or B	2.50
Playboy, Jr., B	4.50
Playboy, Jr., C	2.50
Ranger A or B	3.00
Runt A	8.99
Sailplane C	3.99
Shepherd, Jr., A or B	1.99
Stratton Reliant (Cleveland)	19.00
Ideal for Radio Control	3.99
Strato-Streak	3.50
Super Buccaneer	3.50
Vagabond C	3.50
Varsity B	3.50
Wing 8-52	3.50
Zipper A	1.99
Zipper C	3.00
Zippy, A or B	3.00

GAS ENGINES

Ardon	\$19.99
Atwood Champion 60	23.50
Barton 199	18.50
Barker 60	14.99
Blakely C 60	19.50
Bullet 27	15.00
Cannon 8	19.50
Conquer Kopter-King	24.50
Confessor 60	28.50
De Long 30	19.50
Fleetwing 60	24.75
Hornet	32.50
Ken 60	32.50
McCoy Super 60	39.00
McCoy Red Head (for planes)	39.00
Melcraft 28	19.50
Merlin 34	19.50
Minijet	24.99
Highly Midjet 45	19.50
Onlon 25	14.50
Onlon 80	18.50
Onlon 199	14.50
OK 39	19.50
OK Super 60 W.C.C.	21.00
O.K. W. Twin C.C.	19.50
Packemaker 60	24.99
Rocket 48	23.50
Rogers 28	19.75
Rogers Ram (Class 35)	10.99
Tornado 29	19.50
Vivell 35	19.50
Vivell Twin	45.00

O.K. SUPER 60

Less Cell and Condenser	\$19.00
SPECIAL DELONG 30	\$19.50

GAS MODEL ACCESSORIES

Aero Cells-Light	\$2.50
Quality	3.00
Aero Condensers	.35
Heavy Duty	.35
Alligator Clips	.12
Austin Timers	1.50
Battery Boxes-Pencil	.40
Intermediate	.40
Large	.40
High Tension Leads, sol. end	.12
Ignition Wire, 5 feet	.18
Motor Mounts-Metal	.90
A & B, 30c; C	.90
Power Plus Wet Cells	13.75-3.50
Battery Charger	4.45
Burgess Batteries 3A2	.84
Special for Race Cars & Boats	.84
Burgess Batteries	.91
22A1	1.14
Burgess Batteries 4F2H Booster	1.14
Adjustable Control Handle	.89
Regor Battery Case	.40
Slim Jim Case V.V.S.	.40
Rear Plug V.V.S.	.90
V.V.S. V.V.S. Each	.90
Toggle Switches	.30
U-Roxy Control	7.50
Stranded Wire-72 A 90 ft. test	.08
100 feet	.10
U-Control Wire 100 feet	.75
Universal Flexible Needle Valve	1.25
Valve	.75
Wilco Cells	1.15
Economy	1.00
Regor Stranded Cable	2.25

GAS PROPS

FOR U-CONTROL-HI-THRUST, 10" PITCH	8c
8" 9"-10"	50c
12"-13"	60c
14"	85c
Snafu 75-10"	75c

FOR U-CONTROL-DON WILLIAMS

Pio-Torque High Ball 80c	80c
8" 9" Pitch	85c
10" 11" Pitch	90c
12" Pitch	95c

FOR FREE FLIGHT

Finished and N-lacquered	50c
Don Williams for Free Flight 8" pitch	90c
Snafu 90-13"	90c

RACE CARS

McCoy	\$42.50
McCoy Invader	42.50
Dooling	45.00

TOOLS FOR THE MODEL BUILDER

X-Acto Chest #85	\$12.50
X-Acto Chest #84	7.50
X-Acto Knife	3.00
Carving #77	3.00
Chest #82	3.50
De Lux Handee motor tool	20.50
Genie Tool Set	4.95
Genie Tool Set	9.95
X-Acto Block Planer #40	1.00

CONTROL LINE

A. J. Fireball	\$10.00
Atwood	3.50
Baby Miss Behave	2.65
Berkley P-47	5.95
Bice	2.95
Jr. Cruiser	5.95
Cyclops Scientific	7.95
Omeco Special	7.95
Croun-Snafu	5.95
Falcon Speedster	5.45
Fokker D7	7.50
B-13	7.95
Hellhammer	7.95
Melcor	8.95
P.D.G.	9.50
P.D.G. Senior	7.50
Yether Sharpe De-Lux	2.00
Toppling 100	10.00
Veri Gee	10.00
Wing	10.00
Wing	9.95

SHIPYARD MODELS

VARNEY ELCO PT	9.75
Rogers L.C.I.	1.95

MARINE MODELS

Liberty Ship	5.50
Coast Guard Cutter	9.00
Ships Launch	6.00
Whale Boat	25.00
Cape Monocino	6.00
P.T. 10	6.00
Pine Boat "Alert"	13.00
Key	4.00
Cm Pounder	4.00
Sea Mortar	4.00

ALSO METAL TANKS

AND SHIPS

IDEAL MODELS

Submarine	3.50
Cutty Sark	3.50
Elisabeth	3.50
Sovereign of the Seas	4.00
Destroyer Frigate	4.00
Coast Guard Cutter	4.00
Leddy Victory	9.75
Large Ship	9.75
P.T.	3.50

POWER BOATS

Marlin C	7.50
Delphin 8	6.50
Beauli B-C	15.00
Elisabeth	15.00
U-Bo-Ge De Luxe	15.00

MESOW

Destroyer	49.99
Submarine S-83	49.99

MISCELLANEOUS BOAT

Viking Flats	33.80
Sea Queen	1.80
Grand Banks	3.00
Sail King	3.00
Sea Demon	1.80

GRADE AA-BALSA

STRIPS-(all 28" length)	
1/16x1/16 .01	
1/16x1/8 .015	
1/16x3/16 .02	
1/16x1/2 .025	
1/8x1/8 .015	
1/8x3/16 .025	
1/8x1/2 .03	
3/8x1/8 .04	
1/2x1/4 .04	
1/2x1/2 .04	
3/4x1/4 .04	
1/2x1/2 .04	
1/2x1/2 .04	

PLANKS-(all 36" length)

1/2x2 .25	.40
3/4x2 .40	.85
1 1/4x3	70
2x2	1.00
3x3	1.75

MINIMUM BALSA ORDER

\$3.00	
--------	--

SEND FOR 1947 JUMBO CATALOG 25c

MODEL AIRCRAFT CO.
418 N. CHARLES ST. BALTIMORE 1, M.D.

Speed Cows

(Continued from page 20)



These two speedsters carry the simplest cowl which leaves the "pot" entirely out in the breeze.

would be interesting to see what actual wind tunnel tests will reveal here. If there is any advantage at all it is gained with a minimum of effort, and there is no sacrifice in accessibility or cooling. One model equipped with a cowl of this type which we have seen uses a two-piece hinged cowl with the plywood fins cemented to one of the halves at the centerline.

FIG. 3—The third suggestion is not exactly new, though it is seldom seen in modern speed models. It is our choice since it is a compromise between the other principal methods of cowl, retaining advantages of each and avoiding some of the objectionable features of each. The plug is still accessible, the base of the cylinder is completely housed, and there is no increase in frontal area. The main cylinder turbulence is materially reduced even though there is slight clearance behind the cylinder to allow a cooling circulation of air. Our own model, which employs this cowl arrangement, has its upper fuselage half carved of balsa and hollowed. The cylinder fairing is carved as an integral part of this turtleback, the whole unit being removable.

FIG. 4—In addition to Mr. Newberger's success with it, the neat appearance of the fully cowed engine is apt to entice us into using it whether or not we are convinced it adds miles per hour. Most such cows we have examined are really pressure cows with a small front air inlet and a larger outlet at the rear. Proponents claim that the small front vent not only admits adequate air for cooling but for the carburetor intake as well. Under the stress of contest flying, however, the fact that the engine is virtually sealed up is a disadvantage should anything go wrong. The inside stream of air is something to wonder about in appraising this type of

cowling. Also the clean lines are broken by the front and rear openings, and finally there is the fact that frontal area is necessarily increased. Inexperienced builders often come up with cows of such bulk and crudeness that, beyond any doubt, they are nothing but a hindrance to the model. That the function of the cowl is often not fully appreciated is borne out by the numerous times we have seen cows with fancy grilled air intakes but lacking air outlets altogether! Without a rear vent for circulation the front opening is virtually useless.

There are many other cowl types, some a combination of the above. We have seen some which ignore the cooling fins on the cylinder by exposing only the head fins to the air stream. Then there are the fully submerged types, often made more complex by extension shafts and universal joints which, though unique, lack so much in accessibility as to hardly be worthwhile.

It is hoped that this brief discussion will help you decide on the best cowl arrangement for your particular case.



"Model Airplane Course for BEGINNERS"
Starts in next issue of **MODEL AIRPLANE NEWS!**

The Ghoul

(Continued from page 17)

cut from 3/16 in. sheet bass or some other hardwood and glued in place while the fuselage sides are still on the plan.

While the sides are drying, cut out the crosspieces from 1/8 in. x 3/16 in. stock. At this point note that the cabin detail is drawn only above the center line on the top drawing. Do not confuse the fuselage sides with the 1/8 in. x 1/4 in. stringers. Next cut the 1/8 in. plywood firewall to shape and drill the holes for the ignition. Remove the sides from the plans and trim off any extra glue or rough spots before assembly. Neatness starts in the construction not in the finishing. Use care in placing the crosspieces, wherever possible aligning them with other members of the fuselage.

The next step is to build up the bottom formers from section B through L. 1/8 in. x 3/16 in. balsa is used, cutting carefully to insure accuracy. Square each section with a right angle as the glue dries. After this has been completed select a rather hard piece of 1/8 in. x 1/4 in. for the bottom stringer and glue in place.

The same procedure is followed for top of the fuselage, but allowing the top stringer to extend an inch past section E for the cabin structure.

You will notice on the crosssection drawings that an 1/8 in. sq. stringer is glued on the 3/16 in. sq. to build up the contour. This has been eliminated from the plan to prevent confusion, just as the stringers have been discontinued at section F.

It is now necessary to glue these 1/8 in. squares in place before constructing the cabin. For the time being it will be sufficient to run it back only as far as section E. Cut the cabin fairings from 1/16 in. sheet, and cut the wing platform, shown in the top view, from 1/8 in. sheet, gluing at the proper angle to fit the centersection. Notch as indicated for the fairings and also for the 1/8 in. stringers. Once this has been completed glue them in place, later adding the 3/16 in. x 3/8 in. braces. This for the time being completes the cabin. Do not put in the celluloid until later.

Those who wish to use the conventional two wheel landing gear may do so by changing the outline slightly and bolting it to the firewall. The three wheel gear, while a slight handicap in contests, is excellent for sport flying and saves many a prop.

The nose gear has a shock absorber built in, allowing about 3/4 in. rearward travel. Bend the spring from .045 in. piano wire and hold in place with two washers soldered to the gear.

The rear wheels do not need the shock absorbers and therefore are simple to install. Hold in place with strips of hardwood to prevent travel in any direction. Align wheels so the model coasts in a straight line when pushed along the ground.

The next step is the one which will make or break the model, depending entirely upon you. No motor can function properly on a butchered ignition system so care now will save naughty words out on the flying field.

The original ship carried 4 pencils wired in parallel series which are excellent for everyday flying but make the plane one ounce overweight. An average set is good for over 75 flights with a booster or around 50 without one. Use whichever you prefer. For an easy way to make foolproof terminals solder a washer



1. Genuine supercharger impeller for increased efficiency, more power, greater speed.
2. Spark and mixture controls on rear of engine for easier operation without risk of injury from propeller.
3. Crankshaft turns in two sets of Fairair ball bearings.
4. Two low pressure piston rings for better compression, and less friction.
5. Perfect fitting "uni-flow" aluminum piston especially designed to aid rapid intake and exhaust.
6. Two wide intake ports for better distribution of air-gas mixture in the combustion chamber.
7. Extra large, dual exhaust ports to quickly clear out burned gases.
8. Breaker point assembly of large aircraft engine type.
9. All castings are die cast for better appearance, lighter weight, and greater strength.
10. Deeper, thinner fins for cooler, longer operation at high speeds.

Immediate Delivery

DEALERS: Order from your distributor NOW! If he can't supply you, send order and your Distributor's Name directly to factory.

Designed by and manufactured under the supervision of the men who trained 25,000 Army flyers at the Thunderbird and Falcon fields in Arizona.

SCOTT MOTORS, INC.
SKY HARBOR AIRPORT • P. O. Box 831 • PHOENIX, ARIZONA

... and the only model engine with a Genuine Supercharger!

The same engineering skill that brought the supercharger impeller to the model engine field, has also provided NINE other major features in the Class "C" Supercharged THUNDERBIRD. Check these stand-out advantages — see how much each contributes to easier operation and better performance. Then add the extra-power, greater-speed and smoother performance resulting from the supercharger impeller*—and you get a combination that makes the Supercharged THUNDERBIRD your logical choice for the rugged competition ahead. Ask your model dealer to reserve one of these top-flight performers for you today, an unbeatable buy at only \$24.95.

* Patent Pending



WE ARE MODELLERS TOO!

That's why we know what you want—and we have it. Our stock list would fill Model Airplane News so if you don't see listed what you want, send us your order anyway. SEND FOR OUR CATALOGUE. ABSOLUTELY FREE!!

FREE FLIGHT & U-CONTROL KITS

What do you fly? Consolidated, Capitol, Berkeley, Eagle, Scientific? We have them all. Just order and you will receive.

ENGINES

Which power plant do you root for? Arden, Ohlsson, Bantam, Drone Diesel? We have any engine you want. Zip us an order and—zip the motor is yours.

GAS MODEL ACCESSORIES

Aero Coils.....	\$2.50
Quality.....	3.00
Model Electric.....	
Condenser.....	.25
Alligator Clips.....	.12
Austin Timers.....	1.50
Battery Boxes—Pen- lite, intermediate and large.....	.40
Motor Mounts— Metal, A & B, 30c; C.....	.50
Power Plus Wet Cells.....	\$2.75-3.50
Battery Charger.....	4.45
Megaw Battery Case.....	.40
Slim Jim Case.....	.40
Spark Plugs V-V2- V3-VRI-VR2, Ea.....	.50
U-Reely Control.....	7.50
U-Control Wire.....	
100 feet.....	.50
140 feet.....	.75
Wilco Coils.....	1.95
Economy.....	1.00
Ignition Wire, 5 ft., High tension lead "aero".....	.25
High tension lead.....	.20
Wheel Collars, pr.....	.15
Slide Switches, ea.....	.25
Braided Control Wire, 100 ft.....	1.95
Universal Needle Valve "Flex".....	1.00
Universal Needle Valve.....	.95
Smith Competitive Coil.....	1.50
Erhaust Stack Obol- son "23" & "60".....	.35
Spark Plug.....	
Wrenches Socket.....	.25
All Purpose Wrench.....	.25
Burgess Twin 6 Booster.....	1.15
Condenser—Metal— Aero.....	.35
Condenser—Paper— Solar.....	.25
Ungar Soldering 6 Irons.....	2.00
Ungar Soldering tips 1.00	

GAS PROPS

THRUST, 10" PITCH	
8"-9"10" .45c 14" 65c	
12"-13" .65c 11" 50c	
Snafu 75"—.75c	
Flo-Torque High Ball, 50c	
10" 12" Pitch Pitch	
8" 9" .55c 55c	
10" 11" .60c 60c	
12" .65c 65c	
Flo-Torque—8" to 14", finished and hi-lacquered 50c	

COMET MERCURY PROPS Ea. 40c

6" P-10P	
9" 10P-3/4P	
10" 3/4P-8P	
11" 3/4P-8P	
12" 3/4P-8P	

TO ORDER: All orders over \$1.50 are postpaid. Under \$1.50 add 15c for mailing and handling. No C.O.D.'s. Attach coupon to order and mail right away.

Van Courtlandt Hobby Shop (MA-4)
5973 Broadway, New York 63, N.Y.

- ☐ Please fill and send my order at once. Enclosed is remittance for.....
☐ Please rush me your FREE CATALOGUE.

Name.....

Address.....

City.....

State.....

SHIPYARD MODELS

VARNEX ELCO	
PT. BOATS.....	\$ 7.95
Varney submarine.....	5.00
Varney, L.S.T.....	10.95
Rogers, L.S.T. or Rogers L.C.I.....	1.95

MARINE MODELS

Corvette.....	\$12.00
Liberty Ship.....	7.50
Coast Guard Cutter	
"Subbuster".....	8.00
Ship's Launch.....	5.50
Whale Boat.....	5.50
Sub-chaser.....	9.50
Coast Guard Cutter	
Atlanta.....	11.00
Cape Mendocino.....	20.00
P.T. 10.....	5.50
Tug.....	8.00
Fire Boat "Alert".....	10.00

IDEAL MODELS

Submarine.....	\$ 3.00
Catty Sark.....	3.50
Bluenose.....	3.80
Sovereign of the Seas.....	3.50
Destroyer Preston.....	4.00
Coast Guard Cutter Campbell.....	4.00
Leddy Victory.....	
Cargo Ship.....	5.75
P.T.....	3.50

MEGOW

Destroyer Pillsbury	\$ 8.00
Submarine S-51.....	4.95

MISCELLANEOUS BOAT KITS

Viking Flatie.....	\$ 2.50
Sea Queen.....	1.50
Grand Banks.....	3.00
Sail King.....	2.00
Sea Demon.....	1.50

POWER BOATS

Sea Gull Complete	\$15.00
Sea Elf Complete.....	8.50
Miss America.....	5.95
Rehul Boat.....	15.00
Marlin.....	7.50

X-ACTO

Single blades, ea.....	10c
Saw blades, 2 for.....	25c
Whittler's blades, 2 for.....	25c
No. 1 & No. 2, ea.....	50c
Set No. 82.....	\$3.50
Set No. 83.....	5.00
Set No. 84.....	7.50
Set No. 85.....	12.50
Block Sandpaper.....	50c
Balsa Stripper.....	1.00
Coping Saw.....	1.25

Genie Tool Sets	\$4.95 \$9.95
King Kut Sets	\$5.00 \$10.00

HECO WHEELS

7/8" Dia., pr.....	25c
1 1/8" " ".....	30c
1 3/8" " ".....	35c
1 7/8" " ".....	50c
2 1/4" " ".....	60c

TREXLER AIR WHEELS

2 1/8" Dia., pr.....	60c
3" " ".....	\$1.25
3 3/8" " ".....	1.50

on the plus and minus lead from the battery set, which connects to a plus and minus bolt protruding from the front of the battery box. Slip a nut on and your main ignition gremlins have been licked. A small hatch makes replacement of a new set of cells easy.

For a Forster engine the coil was placed between sections B and C, so locate your coil according to the weight of the engine used. Keep the length of the wires to a minimum and locate the condenser as close as possible to the engine. The timer should be set flush with the fuselage side in order that it be recessed when the stringers are added. A small hatch will prevent dirt and oil from fouling it up.

Once the ignition has been completed add the rest of the stringers of the size specified. Continue them all the way back spacing them evenly as possible. Cut the tail block from soft balsa and carve to the camber of the stabilizer airfoil. A 1/4" slot is now cut in the block to serve as a keyway for the tail. With a sharp knife or razor cut the stringers down until they fair neatly into the fuselage outline.

Now while we're nice and ambitious, temporarily tack a block of balsa on the firewall with a few drops of glue and carve the lower cowl to shape; remove it from the body and carve out to 3/16" thickness. Cut out the necessary holes for the exhaust, sparkplug removal, air scoop or grillwork and the air vents. Once this has been accomplished it may be set aside for a few minutes while the motor mounts are made.

These mounts are bolted to the top of the lug so when the motor is inverted the lugs are easily reached. Removal of the four bolts which hold the mounts to the motor mount bearers permits removal of the engine and mounts.

Now place the motor mounts temporarily in place and glue the bottom cowling on permanently. Only the upper section is removable. While this is drying, drill the four holes as shown on the plans, through the cowling, motor mount bearers and the motor mounts. Countersink the nuts into the mounts and add small plywood pieces under the bolt heads to keep them from biting into the balsa. Once the cowling is dry trim it up wherever necessary and add the grill work. The top section is very simple to make being held in place by two small rubberbands.

Before covering the cabin with celluloid it is a good idea to place your name and address inside where it won't be exposed to the elements if lost.

Soldering a small extension on the needle valve, the addition of a spinner, and a final once over lightly with the sandpaper sums up the construction.

No trouble should develop in the covering stage as there are no difficult curves to contend with. If you want an almost indestructible covering on the body after the Silkspan has been doped several times, apply a second layer with the grain running in the opposite direction to localize any rips that may develop.

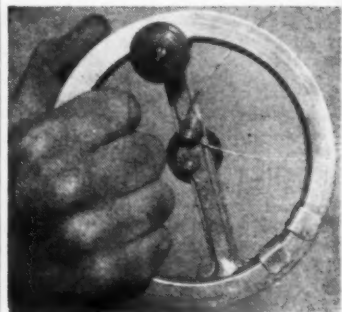
If the wing warps when covered don't worry about it until the wing is completely doped; then run good hot faucet water over the panel in question, twist it in the opposite direction and dry quickly over a gas stove. This has the same effect as steaming them out but is a little easier.

Almost all model builders are "Eager Beavers" when it comes to test flying. It's always better to wait for a calm day than to risk a new ship in the crucial test flights. As a pre-flight check, examine the wing and stabilizer for any new warps or mis-alignment. Check the motor for pro-

(Turn to page 48)

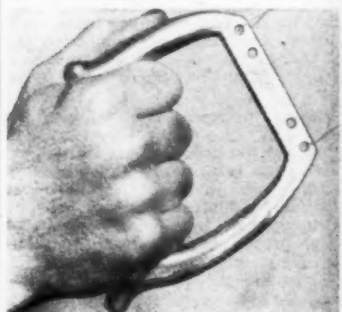
Spectators CAN'T STEP ON YOUR LINES

..... if you have a
Kencraft Control Handle!



Reel-Trol control handle. Perfect control of plane and also lines.

New winding feature.....\$1.95



Kencraft perfect control handle. Natural angle pistol grip.....\$1.00

ORDER BY MAIL PROMPT SHIPMENT ON ALL SUPPLIES

Box Car Stunt Plane.....	\$6.67
Air-Flow Propellers.....	.45
Ed-Co Auto Giro Kit.....	7.50

Trade in your old engine (any make or model) on the NEW KEN DIESEL. Send in your engine, appraisal made same day—you will be notified amount allowed by return mail. The KEN DIESEL 60 is big enough to fly your U-Control. Weight, 14 ozs. Join the growing list of boosters—Buy your KEN DIESEL now. (See page 120, December POPULAR MECHANICS) **\$25.00**

KENCRAFT CO.

225 N. 7th St. GARDEN GROVE, CALIF.

And now... The New 1947 Model ARDEN ENGINE

the logical choice
of champions



This new model incorporates refinements in design which include—

ARDEN NEEDLE VALVE—which is readily adjustable to all types of fuels. Also facilitates easy cowling of engine.

ARDEN LIGHTWEIGHT TANK—impervious to all hot fuels.

Look to Arden Engines for the latest in engineering developments... for greater speed and dependable performance. For Arden owners who may wish to convert their present engines, the Arden needle valve-fuel tank assortment is available for 95c at your dealers.

ARDEN ENGINE PRICES

Catalog No.

1-P-099	.099 Engine with plain bearing crankshaft	\$16.50
1-B-099	.099 Engine with ball bearing crankshaft	\$19.50
1-B-199	.199 Engine with ball bearing crankshaft	\$21.50

Ask your supply dealer
or write for information



ANOTHER SPEED RECORD—Control line, Class 1, Senior National Speed Record established by Stuart L. Richmond at the 1946 New England U-Control Championship Meet. Plane powered by an Arden .099.

MICRO-BILT INCORPORATED • 370 LEXINGTON AVENUE • NEW YORK 17, N.Y.

BUD WARREN Says:



"I've done it again!"

A NEW 1947

Tom Thumb

ENGINE

"This is a true Bud Warren super-special '45' high performance engine exactly like my latest contest winners. Now featuring greater 360° porting plus a large exhaust stack. Plenty of power for 5 or 6 ft. free-flight models... exceeds speeds of 100 m.p.h. U-Control.

The new 1947 Tom Thumb is another well-known Bud Warren bargain! Only by this straight-line distribution offer can you buy a full-size Class 'C' engine of proven design, individually hand turned and guaranteed for easy starting, maximum R.P.M. and perfect workmanship at below the pre-war price."

SPECIFICATIONS and HOW to BUY the 1947 TOM THUMB

Clip the coupon below, enclose money order for \$18.50 (or \$16.50 and your old motor for special offer) and receive a brand new assembled and block tested 1947 Tom Thumb. Exactly as illustrated, equipped with two piston rings, hand fitted steel piston, Champion spark plug, and aluminum fuel tank. Bore $\frac{3}{8}$ " Stroke $\frac{3}{4}$ ". Displacement .45 cu. in. Wt. with tank $7\frac{1}{2}$ oz.



WARREN SALES & SERVICE

412 Brett St. Inglewood, Calif.

☐ Rush me one 1947 Tom Thumb Engine. I enclose \$18.50.

☐ Rush me one 1947 Tom Thumb Engine. I enclose \$16.50 and my old engine (any make) regardless of age or condition.

Name.....

Street.....

City.....State.....

per downthrust or side thrust. Make certain the tail assembly is keyed properly as any sudden change would be disastrous.

Once you are satisfied with your visual inspection, hand glide the ship in tall weeds or have someone catch it for you. It should glide approximately straight without diving or stalling. Add or remove the incidence until the glide is satisfactory. The tail block may now be carved to fit this new adjustment.

While still fervently praying, make the first flight under low power, observing the characteristics and if corrections are necessary they may be made. It should climb to the left in wide circles under low power, and climb in tight left spirals as the torque is increased under full power. The original Ghoul and the forerunners of the design spiraled left and glided left, thereby eliminating any abrupt stall as the motor cut. Remember, a Forster is a lot of power for a ship this size so increase the revs slowly. Keep the motor run down or the Ghoul will go to "Model Heaven". Save it for the contests. Happy Hunting!

Design Forum

(Continued from page 22)

have taken the first road because, unless their models were inherently stable they would crash. Obviously no pilot could fly in them to guide them.

So the history of model aeronautics is largely that of the development of stable aircraft. This is especially true of the period during which gas models were developed. These, in effect, were miniature full scale aircraft and their aerodynamic forces were more nearly like full scale planes than were rubber powered models, because of their greater weight and speed. Considerable difficulty at the start of their development and even up to the present has been encountered in building stable gas powered models. It has been chiefly a matter of guesswork or copying some successful design without knowing why the model performed correctly.

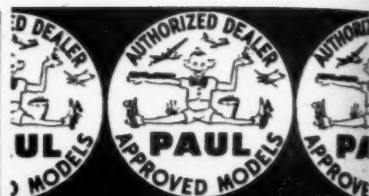
A few ingenious and determined young experimenters learned this secret and have consistently designed and flown successful gas models. Others less inclined to thinking out their problems found it easier to copy these designs and merely enjoy flying them. Unfortunately they copied many poor designs as well as good ones, with the result that every contest is well punctuated with crashes and disappointed modelers.

The most troublesome instability characteristic has been spiral diving tendencies. This has troubled not only the modeler but also full scale aircraft designers who attempted to fly pilotless aircraft as bombs or target planes.

This outstanding problem has strongly impressed Robert Grindel of Havana, Cuba, who undertook to lay out a preliminary design for a gas model that will be inherently stable in all ways. He says he read many articles on the subject and gave it considerable thought. His design, shown in Fig. 1, indicates that he has absorbed completely the basic idea for insuring spiral stability.

Briefly, to obtain spiral stability there are just two things to consider: First, center of lateral area—that is, the center of side projected area, C.L.A., must be very near to or on a line running through the center of gravity, C.G., and parallel to the thrust line. In computing the C.L.A. the projection of the wing must

(Turn to page 51)



In every field

There's

ONE LEADER

For America's FINEST HOBBY MERCHANDISE

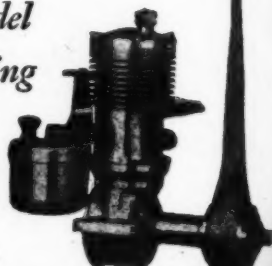
It's

B. PAUL

MODEL DISTRIBUTORS, INC.

AT 5 NORTH 6th, PHILA. 6, PA.

For better
model
flying



The

H & H MOTOR

(Patented)

Something new and different. The H & H Motor is not a Diesel engine; but it does not require any wiring, batteries, spark coil, etc.

Learn now the advantages of this improvement in model engine design. Send 15 cents for catalogue and instruction book, which also gives plans for a practical, simple model plane. Address:

H & H MODEL MOTOR CO.

307 Marshall Street
Norristown,
Pennsylvania

MEGOW ANNOUNCES *The Competitor...*

The FINEST U-Control...

DESIGNED AND FLOWN BY MAT KANIA



UC-5
\$5.50

(Lic. under
J. Walker "U" Control
Pat. No. 2,292,418)

OTHER MEGOW U-CONTROL MODELS

UC-1. Stardust	\$10.00
UC-2. Tyro	3.50
UC-3. Perky	2.00

A brand new kit featuring the best carved fuselage obtainable, shaped leading and trailing edges, wing tips, rudder and stabilizer. Formed landing gear, plywood bulkhead and all metal fittings. Grade A Balsa used throughout. Clear, easy-to-read Plan and Instruction Sheet . . . easy to follow. 26" wingspan. 21" length. 22 oz. flying weight.

A real CONTEST WINNER for engines of .30 to .60 cubic inch displacement.

See Them at Your Dealers



THE MEGOW CORPORATION

PHILADELPHIA 22, PA.

Export Agent: Guterman & Co., 35 S. William St., N. Y. 4.

U-CONTROL

EXTRA PROFIT FOR HOBBYCRAFT STORES

Here are two sure ways to make extra profit in your hobby store or department!

1. Give your customers exactly what they want — Keep your stocks supplied from Auler's huge warehouse of 10,000 items.
2. Keep stocks fresh and investment down — Get fast delivery from Auler's. All merchandise from stock shipped in 24 hours.



H. F. AULER CO.
159 N. BROADWAY • MILWAUKEE 2, WIS.

BUILD THESE

Early Frontier
MODELS

FULL-SCALE • READY TO ASSEMBLE • MADE OF PLYWOOD • FULLY MOVABLE
Stage Coach . . . 13" long
Chuck Wagon . . . 13" long
Beer Wagon . . . 12" long
Ox Cart . . . 9" long

OPEN FOR JOBBERS AND DEALERS



60¢
FRONTIER NOVELTY Mfg. Co.
2522 San Fernando Rd., Los Angeles 41, Calif.

'46 NATIONALS SCALE RUBBER WINNER

THE top prize winner for Flying Scale Rubber at the Nat's was Henry Struck. Duplicate his winning Stinson L5 from plans in the May issue of

MODEL AIRPLANE NEWS

On Sale at All Newsstands April 8th!

Buy — Build — Fly THE BEST a Zandl engineered model



RYAN "ST"

SCALE 1 1/4" = 1'

SPAN 37 1/2"

FEATURING CUT TO OUTLINE BODY BLOCKS, PARTS PRE-CUT, ALL HARDWARE AND SPONGE RUBBER WHEELS.

★ only \$8.50

PLUS 30¢ POSTAGE

NORTH NAVION AMERICAN

SCALE 1" = 1'

SPAN 33 1/2"

FEATURING CRUTCH TYPE BODY CONSTRUCTION WITH FULL SCALE PLASTIC CANOPY, ALL HARDWARE INCLUDING SPONGE RUBBER WHEELS.

★ only \$7.50

PLUS 30¢ POSTAGE



SEE THEM AT
YOUR DEALER

• **ZANDL**

MODEL
PRODUCTS

810 24th Ave.
SEATTLE 22, WASH.

Model Builders SURPRISE ECONOMY PACKAGE

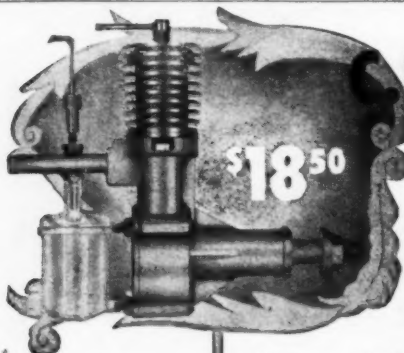
- 1 Megow Flyer \$1.00
- 1 Megow Solid25
- 1 Rogers 40mm. A.A. Gun 2.95
- 1 Iriquois Midget Racer . . .35

\$4.55

Over four dollars and fifty cents worth of merchandise + an X-ACTO KNIFE, + CELENT, + A SURPRISE MODEL KIT—All for \$3.50

ALSO MANY OTHER BUDGET VALUES
WRITE FOR FREE LIST

INTERNATIONAL HOBBYCRAFT STORES
41-16 Queens Blvd.
Long Island City 4, N.Y.
ADD 10% FOR MAILING AND HANDLING



C.I.E. DIESEL .10
CLASS A ENGINE

\$18.50

NO

BATTERY or COIL
SPARK PLUG
CONDENSER
POINTS or WIRING
IGNITION TROUBLE

Just... CHOKE, CRANK, IT STARTS
FOR MODELS UP TO 48" WING SPAN

C. I. E. Compression Ignition Engines
11929 S. WESTERN AVENUE • LOS ANGELES 44, CALIFORNIA

Swings
A 10" PROP
AT 7000 R.P.M.

AVAILABLE NOW!

HERE ARE TWO QUALITY TOOLS
EVERY MODELER NEEDS!



Anvil is cut to exact scale and weighs 12 ounces—free drop forged steel, fully machined, heat treated, and plated. Hammer is all steel, plated, and has removable tips of hardened tool steel, and a nicely knurled handle for positive grip. Supplied with three tips—one, 3/4" face; one, 1" face; and one, oval. Other tips available in same shape, made of brass, aluminum, or plastic, at \$4.50 each or three for \$12.00 postpaid.

Anvil, \$1.75; hammer and three steel tips, \$3.75; both for \$5.50. All postpaid, by return mail. Send your order today!

PRECISION MACHINE COMPANY
739 S. Lincoln Avenue
Alliance, Ohio

be doubled because there are two dihedral upturned wingtips presenting side area. If double fins are used the fin area must be doubled, and the same with wheels if there are two.

The center of side area may be determined by cutting out a cardboard pattern to exact shape of the model's projected side view. Where it is necessary to double the side area, paste an extra sheet of cardboard over that part of the silhouette, for instance the wings. To determine the center of area, balance this cardboard silhouette on the point of a pin, moving the point of support until the cardboard balances horizontally. This point then will be the C.L.A.

The second requirement is that the neutral axis of the side area is horizontal or sloped up slightly toward the front.

This axis is a line drawn through the center of forward lateral area and rearward lateral area, marked F and R. These two centers may be determined by cutting the cardboard in half through the C.L.A. and then determining the center of each half. When this axis is slanted slightly upward the airplane will climb with nose pointed up so that it climbs; and if it has a spiral tendency it will spiral climb. If this axis is sloped downward, it will bank with the nose down and produce a tendency to spiral down or dive. The degree of bank or spiraling tendency is determined by position of the C.L.A. If it is above the C.G. spiraling will be acute. If on a level with or below it, little if any banking or spiraling will result. The neutral axis obviously is not important if the plane does not spiral or bank; but if it does, it is important because it determines the way the model will roll, with the nose up or down.

You will note that Mr. Grindel has shaped his model so that the C.L.A. is very low, and with the low rearward extending fuselage and high area in the front the neutral axis will slope upward as shown. He has incorporated another feature which is extremely important: he kept the thrust line high, thereby not only insuring a high C.G. relative to the C.L.A., but he also shortened the looping couple between the thrust line and the line of resistance. The lower the thrust line the larger is this couple, therefore the greater is the looping tendency. Obviously, greatest duration is obtained by a straight, steady, steep climbing flight with no looping.

Mr. Grindel's model should achieve this result completely. First, it will have a tendency to fly straight because the C.L.A. is low and the neutral axis is sloped up. Second, it will climb steadily without looping because the thrust line is high and tends to keep the nose down rather than to pull it up. We suggest that Mr. Grindel set his wing at 3 to 3 1/2 degrees, and his stabilizer at plus 1/2 to 1 degree. Various settings between these limits should be tried and the one that will give best results selected. A plane such as Mr. Grindel shows here, built to the limit of lightness, should equal in performance any plane flown on a contest field.

James McCullough of El Monte, Calif., and Arthur Runyon of Franklin, N. J., have submitted designs for swept forward wing gas models that are almost identical. The only fundamental effective difference between the two is that Mr. McCullough uses a high fin and Mr. Runyon.

*Charles H. Grant's Theory of Rotational Stability.

Four Star Model Builders SUPPLY

CONTROL LINE KITS

Sharpie	\$2.00	Atomic	\$3.50
Baby Shark	2.95	Cyclone	4.95
Tiger Shark	4.95	Bee	3.45
Super V Shark	4.95	Dipse Special	2.95
Strato Kitten	2.95	Aero Puppet	3.95
Strato Cat	5.95	Tarpon	10.75
Berkley Bug	2.95	Berkley P-47	5.95
Berkley Bal	4.95	Topping Alum.	10.00
Berkley P-51	7.95	Buzz	8.95
Falcon Speedster	5.95	Beecraft D17	9.95
Falcon Sportster	5.95	Piper Skycycle	7.50
Whirlwind	7.95	Comet Whizzer	9.95
P.D.Q.	5.00	Super Fireball	10.00
P.D.Q. Senior	2.50	Knight Twister	7.75
Orbit	6.95	Beecraft F47	5.95
Glard Hornet	7.50	Flyer FRI	8.90
Glard G-13	2.50	Rohan D-7	7.50
Glard Swift	7.50	Vee Gee	10.00

Rubber Power Control Models

Gollywook	\$1.50	Flying Cloud	\$1.50
Dyns Woe	1.50	Outdoor Cabin	8.85
Jabberwock	1.50	Victory	8.50
Yonder	1.50	Gold Star	0.50
Lance Stick	1.00	All American	1.00
Comet Gull	1.25	Wise World's Fair	1.00
Lance Class E Cabin, dry	\$2.50; with fluids	\$2.95	

GLIDERS

H.L.		T.L.	
Thermio 18	\$0.20	Thermio 30	\$0.50
Thermio 20	0.35	Trooper	0.65
Thermio Trio	0.35	Thermio C	0.60
Mosquito	0.15	Thermio 50	1.00
Streaky	0.35	Sailing	1.00
Skykark	0.50	Thermio 50X	1.50
Sinbad	1.00	Floater	2.00
Super Sinbad	2.50	Thermio 20	3.50
Cosmo	1.50	Thermio 72	3.50
Thermal Ace	0.25	Eaglet	0.50
Tiger Math	0.25	Candor	1.00
Gnat	0.25	Albatross	3.50

SUPPLIES

BALSA WOOD Best Quality—36" lengths

STRIPS		SHEETS	
1/16 sq.	1/8	1/8x2	8e
1/16x1/16	1/8	1/32x2	8e
1/16x1/4	2e	1/16x2	8e
1/16x3/8	2 1/2e	3/32x2	10e
1/16x1/2	3e	1/8x2	10e
3/32 sq.	3 for 4e	5/32x2	12e
3/32x3/16	2e	3/16x2	14e
3/32x1/4	2 1/2e	1/2x2	10e
3/32x3/8	3e	5/16x2	18e
3/32x1/2	3 1/2e	3/8x2	20e
1/8 sq.	3 for 8e	1/2x2	22e
1/8x1/4	2 1/2e	1/2x3	22e
1/8x3/8	3 1/2e	1/2x3	22e
1/8x1/2	4e	3/4x3	25e
3/16 sq.	2e	1/2x3	25e
3/16x1/4	3e	1/4x3	35e
3/16x3/8	4e		
3/16x1/2	5e	PLANKS	
1/4 sq.	3 1/2e	1x3	50e
1/4x3/8	6e	1x6	80e
1/4x1/2	7e	2x2	90e
1/4x3/4	8e	2x4	\$1.20
5/16 sq.	5e	2x6	1.80
3/8 sq.	8e	3x3	1.50
3/8x1/2	9e	3x4	2.70
1/2 sq.	15e	4x4	3.50
3/4 sq.	15e	4x6	3.70

Beveled balsa trailing edges, 36" lengths

3/32x3/8	3e	3/16x3/4	6e
1/8x1/2	4e	7/32x3/4	7e
5/32x3/8	5e	1/4x1	7e

Propeller Blocks

8x7/8x1-3/16	6e	16x1-1/2x2	25e
10x1x1-1/2	10e	18x1-3/4x2	32e
12x1x1-1/2	12e	18x1-1/2x2	19e
14x1-3/16x1-3/4	18e	10x2x2-1/4	23e
Glider Wing Section		8x3/16x20	18e

1 oz. 10c, 2 oz. 17c, 4 oz. 25c, 1/2 pt. 50c, qt. 85c, gal. \$2.75.

CLEAR DOPE, THINNER, OR CEMENT

COLORS 1 oz. 10c, 2 oz. 20c, 4 oz. 30c, 1/2 pt. 55c, qt. 85c, gal. \$1.55, 3 gal. \$4.00. Red, Orange, Yellow, Green, Lt. Blue, Dk. Blue, Black, White, Brown, Olive Drab, Silver, Battleship Gray, Woodfiller.

MOTORS

Hornet 60A	\$35.00	McCoy 49	25.00
Arden 099	19.50	McCoy MCCA	35.00
Arden 195 B.B.	23.50	Foster 29	24.75
Atmos 097	15.50	Maderwell 40	18.00
Atwood Champ, JH	23.50	Ohlsson 19	14.50
		Ohlsson 23	16.50

Immediate Delivery

McCoy 49	25.00
McCoy MCCA	35.00
Foster 29	24.75
Maderwell 40	18.00
Ohlsson 19	14.50
Ohlsson 23	16.50

Pure Gum RUBBER

Now at new low prices.

1/8" flat, 1c per ft., skin approx. 210 ft.	\$2.00
3/16" flat, 1 1/2c per ft., skin approx. 130 ft.	2.00
Uniform thickness, 1/32"	

Bantam .199	18.50	Ohlsson 60	18.50
Bulliet .27	19.00	O.K. 60	18.00
Cannon 300	19.75	*Rocket .46	22.50
Cannon 358	21.50	Super Cyke Dual	23.40
DeLong 30	19.50	*Super Cyclone	22.65
*Dennywind .57	22.75	Viveli 35	18.00
Flotwind	24.75	Minijet	35.00

*Complete with coil & condenser

FREE FLIGHT KITS

American Ace 36	\$1.50	Topper A	\$3.50
Buccaneer 36	1.50	Pacer B	3.95
Brigadier 38	1.95	Pacer C	4.95
Musketier 42	2.50	Airfinder	3.95
Skyrocket Super A	2.55	Jiffy	1.95
Brigadier 58	2.95	Bee	1.95
Musketier 54	3.50	Spearhead Jr.	1.95
Buccaneer 48	3.50	Runt	2.50
American Ace 54	3.95	Humdinger	3.95
Bucc. B Special	3.95	Brooklyn Dodger	3.95
Musketier 51D	4.95	Super Vagabond	3.50
Cavalier 60	6.95	Vagabond	3.50
Bucc. C Special	6.95	Aero Champ	2.50
Super Buccaneer	8.50	Ranger	3.00
Custom Cavalier	15.00	Zemby	3.00
Zipper A	1.95	W O G	5.50
Interceptor, Comet	3.95	Piper Cub, Megaw	6.95
Zipper	5.95	Banshee	6.95
Sailplane	8.95	Super Quaker	8.00
Baby Playboy	1.00	Coronet	3.50
Playboy Jr.	2.50	Varsity	2.50
Playboy Sr.	4.80	Larkie	3.50
Stinson Reliant	15.00	Mercury	5.50
Piper Cub A	1.95	Arden Air	2.00
Flamingo	8.95	Western A	3.50
Piper S Cruiser	16.95	Western B	4.50
Rosier	2.95	Western C	6.95
Jersey Javelin	3.95	Zoomer	6.95

ACCESSORIES

Aero Coll. Lt. Wt.	\$2.50	Control Wire, 100'	65e
Quality	3.00	010, 012, 014, and	
Austin Coil	2.50	016, 018, 020	75e
Competition Coil	1.95	Flexible Leads	25e
W.J. Leads	3.00	W.J. Wheels 2 1/2"	1.00
Aero Metal Cond.	0.35	Sponge Rubber Wheels	
H.T. Leads	0.15	2"	.40
Ignition Wire, R.	0.82	2 1/2"	.40
Soldering Lugs	6/5c	3 1/2"	.60
Fahnestock Clips	2/5c	2 1/2" Heco Air	2.15
Toggle Switch	35c	2 1/2" Heco Tail Wheel	1.00
Slide Switch	25c	Alum. Hub 7/8"	18c
Tip Jacks, Set	60c	Alum. Hub 1 1/8"	15c
Pen Wee Clips, ea.	18c	Hely Air 1 1/8"	45c
Aligra Clips, ea.	18c	2" 50c; 2 1/2"	75c
Spark Plugs, V, V2,		Plastic Spinner	75c
V3, VRI, VR2, ea.	50c	Gun Propellers	
Austin Timer	1.50	Floturus 7"	80e
Arden Timer	2.50	Highball 8"-12"	80e
Battery Box, Lg.	0.40	13"-14"	85e
Med. Sm.	0.40	15"-16"	85e
Mounting Bolts 4/10c		Snafu 75, Plastic	75e
1/4 ID Washer	6/5c	Topping Multi-Pitch	10"
1/4 Lock Washer	6/5c		
Alum. Mounts, Sm.	35c	Hi-Thrust	
Flexible Needle Valve	1.25	Diam. 6" or 8"	
Neoprene Tubing, Ft. 25c		ster Pitch	Pitch
Aligra Clips, ea.	85c	8" or 9"	35e
Metal Tank, 1 1/2" or		10"	45e
2" Herz. or Vert. 1.00		11"	45e
Wet Flight Batt.	2.75	12" or 13"	50e
Bouncer	3.50	14"	65e
Charger	4.85	Plywood 1/8x12	25c
Auto Chrg. Stand	1.95	1/16x12	25c
Bellcrank	25c	3/32x12	25c
Control Handle E2	69c	1/8x12	25c
Control Handle	75c		
1" alum.	1.25	Tubes Cement, Sm.	
Flightline Reel	1.00		10e
Sullivan Reel & Hd.	1.25	Birch Dowels, 3"	
Musik Wire, 3 Ft. 020 &		1/8, 3/16, & 1/4"	ea. 5c
020, 3c; 025 & 040, 4c;		Scotch Insulating	25c
1/16, 5c; 3/32 10c &		Tape Roll 1 1/2" x 50'	5e
1/4, 15c		Washers 1/8" doz.	5e
Tissue, All Colors	5c	1/4" 7e	
Sikapan, 00	5c	Ball Bearing, Sm.	10e
Sikapan Gm 10c, 3/25c		Plastic Wheels, 1/2" 4c pr.	
Bamboo Paper, Red, Yel.		1/2" 5c pr, 1 1/2" 7c pr.	
Blue, Green, White		Birch Wheel, 1 1/2" 8c pr.	
ea. 10c		Balsa Wheels, 1 1/2" 20c pr.	
Balsa Props, 4"-4c, 5"-5c,		Alum. Thru, 1 1/2" OD,	
6"-6c, 8"-8c, 10"-10c,		1/16 OD, 3/32 OD 15c ft.	
12"-12c, 14"-14c,		Ohlsson, O.K. & Bullet	
16"-20c		Parts in Stock.	
Prop Shafts, Sm.	6/5c	Chest #1, #2	50c ea.
Lg.	8/5c	Xact #3	55c ea.

FREE Postage in U.S.A.

Foreign orders add 15% to total order for packing and postage.

Send for Complete Price List

FOUR STAR MODEL BUILDERS SUPPLY
116 STATE STREET • SCHENECTADY 5, N.Y.



with PLASTIC WOOD

PLASTIC WOOD molds right into the lines of your model. Won't chip, crack or split! Handles like putty... hardens into wood. Can be carved, sawed and sanded. Ready to use. Takes dope or paint.

YOU'LL WANT Plastic Wood Solvent, tool
Makes a perfect filler when mixed with Plastic Wood. Solvent removes Plastic Wood from tools and hands. Solvent is also used as a dope thinner!

FREE BOOKLET...

"Slick New Tricks for Building Better Model Planes." Ask your local model dealer or write Boyle-Midway Inc., 22 E. 40th St., New York 16, N.Y.



PLASTIC WOOD
A CELLULOSE FIBRE FILLER

MR. DEALER!
Have You
Received Your
Copy of
NATIONAL HOBBY'S
1947
REFERENCE
CATALOG
With Dealers'
Discount Schedules?

NATIONAL

HOBBY DISTRIBUTORS
510 St. Paul St., • Baltimore 2, Md.

a low fin. (A composite view of the two planes is shown in Fig. 2) They are seeking to develop some new and unusual form of aircraft, gas models in particular. Both believe that possibly this arrangement will solve the stability problem of tailless airplanes without loss of efficiency.

As far as average considerations are concerned this is true. In the past a number of full scale aircraft were built along this line. However, there is one great difficulty which is not at first apparent. This airplane will fly beautifully in still air or where conditions are not disturbed; but in breezy weather or during certain types of maneuvers this type is dangerous for full scale work and unstable as a model. It is stable longitudinally because the wings at the tips are of much greater angle, approximately a 10 degree angle, than at the center, which is about 3 degrees to the line of thrust. The center part of the wing which is more negative is back of the tips; consequently it acts as a negative stabilizer.

When the plane noses up the lift of the center and rear position of the wing increases to a greater extent than the lift at the tips. This action lifts the rear part of the plane, correcting the nosing up tendency. The opposite is true if the plane noses down. However, the fact that the tips are of greater angle than the center part of the wing causes directional or lateral instability or both under certain conditions. This results because the tips of the wings stall before the center portion of the wings. It can readily be seen that in disturbed air one tip may stall before the other at high angles of attack.

This stalling action is sharp and abrupt and causes the plane to roll sideways suddenly about its longitudinal axis because of sudden loss of lift on one wing tip; or it may yaw sharply about its vertical axis due to sudden increase in drag caused by the stalling. This makes such type of plane very cranky, with the sudden change in lift and drag taking place at points remote from the center of weight, producing large disturbing moments. In full size airplanes it is the practice to wash out the wings—that is, reduce the angle at the wingtips rather than increase it so that the wing center will stall before the wingtips. This condition is absolutely essential to the stability and ease of handling of civilian aircraft. Washing out the wings in this way instead of washing them in as indicated in Fig. 2 prevents sudden stalling and then falling off sideways.

We cannot advise use of this type of model aircraft except as a means of finding out what not to do. As a contest model, we can say with almost certainty that it will be unsuccessful unless some other factor is brought into the problem that will correct the unstable tendencies mentioned here.

Harold Geres of Van Nuys, Calif. submits the design of a civilian plane with the new type of lateral and directional control shown in Fig. 3. The general design of the plane itself is excellent. It should be a convenient and efficient plane for the average flier. To obtain lateral and directional control the wingtips are hinged so either one may be turned up, forming dihedral angles of various degrees. Mr. Geres claims that when the wingtip is pulled up, as indicated in the front view, lift on this wing becomes less than on the opposite one so that the plane banks or rolls toward the side of the up-

Money \$\$\$\$ in your spare time

If there is no hobby supply dealer in your locality, we have a proposition for you.

We want one model builder in each town to take orders for kits, engines and accessories. You do not have to carry a stock. Simply take orders from your fellow model builders and friends. Send us the orders, deducting for yourself the liberal discount allowed to MSS dealers.

There is no investment required, other than the very small sum necessary to defray the cost of the comprehensive and informative catalogue, order forms and other sales helps which we supply to the authorized MSS dealers. This amount will be refunded after reaching a certain volume of sales.

Act at once to be the MSS dealer in YOUR town. Mail the coupon AT ONCE.

MODEL SERVICE & SUPPLY CO.,
1451 BROADWAY, NEW YORK, N.Y.

Please send complete information, and an application for the MSS DEALERSHIP in my town.

NAME.....AGE.....

ADDRESS.....

CITY.....STATE.....

(Please Print)

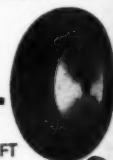


NEW! RUBBER TIRED WHEEL WITH ALUMINUM HUB

7/8" DIA. 10c ea.
1" DIA. 12c ea.
1-3/16" DIA. 15c ea.
1-5/16" DIA. 20c ea.

Clipped Finger Trouble?

Use Leaders' FLEXIBLE SHAFT EXTENSION... Designed for those hard to get at places, the LEADER FLEXIBLE SHAFT EXTENSION fits all motors. Ideal for inclosed motors no matter where they are placed.



**FLEXIBLE SHAFT
EXTENSION**

FLYWHEELS!!

U-Control flywheels. Designed for more speed... Easy to install.
1 1/2" x 5/16" 75c Each
1 3/4" x 1/4"

Wheel Collars.....15c p.
Bell Cranks.....25c ea.
U-Control Handles.....25c ea.
Fuel Pump Bottles.....75c ea.
Slide Switch SPAT.....50c ea.

DEALERS JOBBER WRITE

LEADER

MODEL SUPPLY COMPANY
6539 S. ASHLAND, CHICAGO 36, ILL.

turned wingtip. Because of this roll and bank the ship turns in direction of the roll, thereby providing directional control. Lateral control is effected by raising either wingtip as desired to reduce lift on any wing.

Unquestionably, lift on a wing can be reduced by raising the wingtip in this manner; also control can be affected as described. There is another question, however, that one must consider when any such mechanism is used, namely: "Can it be done as simply or more simply, as cheaply or cheaper than means used at present to accomplish the same ends?" Our answer in this case is "No, it can not."

We believe it is much simpler to provide a one-way aileron system where each aileron is part of the wing trailing edge at the tips. Each aileron may be turned up as desired to reduce the lift on and thus to lower either wing. Such an arrangement does the same job as Mr. Geres' device with less complication. By raising each aileron as desired without lowering the opposite one, drag is reduced on the wing and not increased as in the case of ailerons on average planes.

Mr. Geres' chief argument for his type is that it does not increase or decrease drag and thereby cause yawing moments. He believes a smoother flight will result. By using trailing edge ailerons as described above the same condition may be obtained as in Mr. Geres' device. Chief advantage of the trailing edge aileron is that it is much lighter, that the aileron does not support a fairly large percentage of the lift load at any time as is the case with Mr. Geres' wing tip aileron. Therefore, stresses on the hinges of the trailing edge type are much less than on the tip type. With the latter, the force required of the pilot to operate the controls would be prohibitive and the stress on the controls would vary with any set position of the wingtip. With such a device a pilot would be worn out before he had flown many miles. Any mechanism that may be incorporated to reduce this strain would only complicate the structure and add weight. In simple words, we think this device is workable but not practical and advisable.

NOTICE

We wish to make a correction of statements we made in our columns in a previous issue.

We assumed that miniature jet engines require pressurized fuel systems as suggested by Robert Ronay. We learn from William L. Tenney, an expert on this type of engine, that they do not require such systems. "Both the gravity feed and spring plunger systems should under no circumstances be employed. With these systems, fuel flows whether or not the engine is running thereby creating a serious fire hazard. Jet engines employ simple suction like miniature reciprocating engines. With this system no special tanks are required and there is no fire hazard."

• •

Be sure to send in ideas and designs of your dream ships to "Design Forum" for analysis. Simple but neat and accurate drawings should accompany precise descriptions.

PHOTO CREDITS

Page
2 Above Acme
26 Below Consolidated Vultee Aircraft Corp.
28 All Martin and Kelman
28 All Hagstrom
60 Photo by Messner



Jewel of Precision
SUPER CHAMPION MODEL JH

ATWOOD MANUFACTURING CO., BURBANK, CALIFORNIA

PLANS

AND ALL THE LATEST ...

TECHNICAL DATA

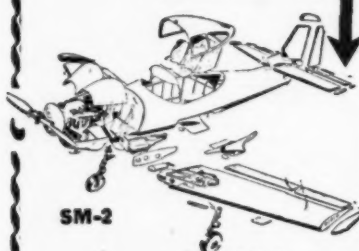
on these two NEW
AIRPLANES



SM-1

BELL HELICOPTER MODEL 47B

and



SM-2

NORTH AMERICAN **NAVION**

NOTE: PLANS ARE SCALED FROM FACTORY DRAWINGS & BLUEPRINTS

EACH PACKET CONTAINS:

- ★ ONE LARGE PLAN
- ★ ONE SMALL PLAN
- ★ EXPLODED VIEWS
- ★ CUT-A-WAY VIEWS
- ★ OVERALL PHOTOS
- ★ INTERIOR PHOTOS
- ★ EXTERIOR DETAIL PHOTOS
- ★ SPECIFICATIONS
- ★ PERFORMANCE DATA
- ★ INTERIOR & EXTERIOR DECORATIVE SCHEME

and all other possible information
MORE PLANS COMING!

25c AT YOUR DEALER

If your dealer can't supply you, order direct, including his name & address.
(Dealers contact your Jobber)

JOBBER: WRITE FOR SAMPLE PACKET & DISCOUNTS

SCALEMASTER PLANS

Post Office Box 98
GRAND RAPIDS, MICHIGAN

Latest Model Motors

(Continued from page 40)

claimed advantages can be presented in a future article. It also is stated all the technicians who are building the engine were formerly with the University of California, Division of War Research.

The engine is intended for model racing cars, boats and planes, a propeller adapter being supplied for the latter use. Since the compression ratio of the Hassad is 13.80 to 1, highest of those ratios listed in the tables, the operator is warned against using straight methyl-alcohol (methanol) fuel because of detonation, which may cause a dangerous rise in temperature. It is noted that the main purpose of using methyl-alcohol is to lower the temperature of the intake tract and thus allow a greater charge to enter the cylinder; but unless the fuel is chemically treated it cannot be used with a compression ratio much higher than 9 to 1. A particular brand of racing fuel is recommended for the Hassad. When tuned for racing it is stated a condition called "splattering" should be noted when the ignition is shut off. This is caused by the heated sparkplug firing the engine for a couple of seconds, and denotes optimum fuel efficiency, as the engine should be at a high temperature for best performance. The sparkplug porcelain should become a light tan color, as a gray-white denotes too lean a mixture and a dirty brown or black too rich a mixture.

The cylinder, which incorporates twin exhaust stacks, is machined from aluminum bar stock, and the fins of the detachable cylinder head are milled on to minimize distortion. Through-bolts attach the head and cylinder to the sand cast aluminum alloy crankcase. Meehanite iron is used for the cylinder liner and piston. The dural connecting rod has a bronze bushing at the lower end. Two ball bearings having diameters of 5/8 in. and 1/2 in. support the chrome-moly steel crankshaft. A shaft-type rotary valve is used. The engine speed of 17,600 rpm with a 9 in. diameter, 12 in. pitch, or 14 in. pitch propeller is stated to have been certified by the U. S. Bureau of Standards. The weight of 18 oz. is somewhat higher than most engines of this displacement.

Vivell Motors has brought out an entirely new line of engines consisting of the Vivell Twin 60, Vivell Forty-Niner, and Vivell Super 35. All are two-port engines with shaft-type rotary valves, cylinders machined from solid bar stock, and cast iron pistons honed and lapped to fit the individual cylinders. Cylinders of the Twin and Super 35 are flanged at the lower end and attached by four screws to the aluminum alloy crankcase. The aluminum alloy crankcase of the Forty-Niner is extended up and around the cylinder nearly to the level of the cooling fins. The cylinder is attached to this extension with screws. The connecting rod of the Twin is machined from aluminum alloy and fitted with a bronze bearing and bearing caps at the lower end, the caps being necessary for assembly purposes where a two-bearing crankshaft is used. The connecting rod of the Forty-Niner is machined from tool steel and supplied with a bronze crankpin bearing. Cast aluminum alloy is used for the rod of the Super 35, and bronze bushings are fitted at both upper and lower ends. All three engines have crankshafts machined from alloy steel bar stock, hardened and ground, and bronze-bushed main bearings. A detachable cyl-

(Turn to page 56)

EAGLE

IS "TOPS" FOR

CONTROL LINERS



EAGLE MODEL AIRCRAFT CO., INC.
257 Water Street, Brooklyn 1, N. Y. Cable Address: EAGLECO

« Secrets of » Flying Model Aircraft

PREPARE NOW FOR THE BIG
CONTESTS COMING UP!

Discover how to get top performance from your models by reading this 76 page illustrated handbook. Learn the methods experts use for flying rubber powered models and gliders.

Covers these subjects: Negative thrust • wing and tail settings • power • flight patterns • contest procedure • and many others.

Ask Your Dealer Or Send \$1. To

REGAL

MODEL AIRCRAFT CO.

P.O. Box 3117, Okla. City, Okla.

DEALERS: Write for Attractive Discounts

MODEL AIRPLANE NEWS

... by subscription is only

\$2.50 for 1 year

4.00 for 2 years



- Price 1/2 of similar kits
- Takes any A, B, or C motor
- Fully carved and hollowed all balsa fuselage • Aluminum Tubing
- Solid balsa wing cut to shape
- Solid balsa tail assembly cut to shape
- Cut to shape plywood motor mount
- Ready bent landing gear
- 2 Rubber wheels
- Pilot Control (New Improved Controlling)
- Full size plans Fuselage 19" \$3.95
- Wingspan 21 1/2" Chord 4" ADD 50c BY MAIL

MASTER Modelcraft

1074 FRANKLIN AVENUE, NEW YORK 56, N. Y.

**ESTABLISHED
1931**

This is only a partial listing from the "Gas" section of our completely illustrated FREE catalog.

16 years of mail order merchandising guarantees our service and your satisfaction. Our business depends on pleasing you. Your mail order business should be sent to us because:

**LARGEST HOBBY MAIL
ORDER FIRM IN AMERICA
1947**



Our own four story building to serve you. Drop in for a visit.

1. Money back guarantee—no questions asked.
2. Unused purchases exchangeable.
3. No packing charges—we insure safe delivery.
4. 24 hour service—no waiting.
5. Most complete gas model stock in America.
6. Competent understanding of your modeling problems.
7. No "minimum" orders. Any order is welcome.
8. FREE prop, "Presto" starter and copy of Model Gas Engine Theory & Practice (50 pages) with every motor; FREE sponge wheels and "Pro" model knife with every plane. Ask for them.
9. FREE membership in "Modelcrafters of America," the club that keeps you up to date on gas modeling.
10. We don't carry everything—ONLY THE BEST!
11. FREE illustrated 32 page catalog with every order.

MOTORS

(FREE: See item 8 above)

● Arden 209	(CL A)	\$18.50
● Arden 188	(CL A)	\$22.50
● Marvin	(CL A)	\$15.50*
● Bantam	(CL A)	\$18.50
● Bullet	(CL B)	\$15.00
● Ohlson 23	(CL B)	\$16.50
● Cannon 300	(CL B)	\$17.75
● DeLong 30	(CL B)	\$18.50
● Forster 29	(CL B)	\$24.75*
● Hurricane	(CL B)	\$18.75*
● Melcraft	(CL B)	\$18.50*
● Marlin	(CL B)	\$18.00*
● Rogers 29	(CL B)	\$15.75*
● Rogers Ram	(CL B)	\$18.85
● Torpedo	(CL B)	\$18.50
● Barker	(CL B)	\$14.50
● Cannon 350	(CL C)	\$21.50
● Dennyville	(CL C)	\$15.85
● Ohlson 60	(CL C)	\$18.50
● OK Super 60	(CL C)	\$21.00*
● Rocket	(CL C)	\$22.50*
● Vivell 35	(CL C)	\$18.00
● Vivell Twin	(CL C)	\$35.00
● Pacemaker	(CL C)	\$24.85
● OK 29	(CL B)	\$18.50*
● OK Twin	(CL C)	\$55.00*
● Alwood Champion	(CL C)	\$23.50
● Atom	(CL A)	\$15.50
● Arden 29500	(CL A)	\$21.50
● Arden 19900	(CL A)	\$25.50
● Vivell 49	(CL C)	\$26.00
● Perky	(CL A)	\$18.00
● DeLong	(CL C)	\$26.00
● Contactor	(CL C)	\$28.50
● Flowwind	(CL C)	\$24.75*
● Ken	(CL C)	\$32.50
● McCoy	(CL C)	\$35.00
● Minjet	(Jet)	\$55.00
● Harnet	(CL C)	\$35.00
● Wave Diesel	(CL A)	\$75.00
● Wexson	(CL B)	\$20.00*
● Hurleman	(CL C)	\$20.00
● Brown D	(CL C)	\$21.50*
● Madowell	(CL C)	\$18.00
● Pierce	(CL B)	\$11.50*
● H.K.Q.	(CL C)	\$30.00*
● New Thor	(CL C)	\$35.00*
● New Thor Kit	(CL B)	\$35.00

*Includes coil and condenser

RACE CARS

McCoy	\$42.50
Deering	\$43.00

MOTOR ACCESSORIES

Battery Box (all sizes)	\$ 40
Megaw Plastic (pen. or med.)	40
Aero Coil (Featherweight)	2.50
Aero Coil (Quality)	3.50
Smith Competitor Coil	1.95
Arden Coil	2.50
Winston Coil	2.00

FREE FLIGHT PLANES

(FREE: See item 8 above)

For "A" & "B" Motors

Coronet 40*	\$2.50
Buccaneer 40*	3.50
Buccaneer 30*	1.50
Box 40*	1.95
Brooklyn Dodger 50*	3.95
Pacer B 53*	3.95
Yopper 41*	3.50
Roamer 45*	2.95
Zombie 44*	3.00
Rocketeer 40*	2.95
Playboy Jr. 55*	2.50
Baby Playboy 33*	1.00
Buccaneer B Spl. 54*	3.85
Jiffy 34*	1.50
Strates 42*	2.95
Amer. Ace 34*	2.95
Banshee 50*	6.95
Wanderer 34*	3.95
Bay Ridge Mike 49*	2.50
Zipper 54*	6.95
Rust 44*	2.50
Air Faller 44*	3.95
Rogers & Wilco 50*	3.95
Zoomer 60*	6.95
Musketier 34*	4.95
Amer. Ace 38*	1.50
Stanzel Interceptor 51*	2.98
Skyrocket 36*	2.95
Ranger 46*	3.00
Comet Interceptor 42*	2.95
Musketier 42*	2.50
Brigadier 58*	2.95
Brigadier 38*	1.95
Cleveland Piper Cub 36*	1.50
Aero Champ 40*	3.95
Yogi 42*	3.95
Piper Cub Coupe 40*	1.95
Jersey Javelin 48*	3.95
Larkyer 50*	3.50
Strate Strake 40*	2.50
Spearhead Jr. 44*	1.95
Megaw Piper Cub 53*	6.95
Ensign 50*	3.50
Avient-Air 32*	2.00
Crossader 40*	7.50
Baby Quaker 35*	3.00
Humdinger 52*	3.95

For "C" Motors

Piper Super Cruiser 64*	\$10.95
Pacer "C" 60*	4.95
Buccaneer Std. 60*	5.95
Buccaneer C. Spl. 72*	6.95
Piper Buccaneer 50*	8.50
Mercury 72*	5.50
Playboy Sr. 70*	4.50
Shinson Reliant 78*	15.00
Musketier Std. 72*	4.95
Cavalier 60*	5.95
Wag 60*	5.50
Vagabond 74*	15.00
Custom Cavalier 74*	5.50
Swiplane 78*	8.95
Spearhead Sr. 60*	3.95
Skybe 60*	6.95

CONTROL-LINE PLANES

(FREE: See item 8 above)

Capitol Ecroupe 40* B-C	\$ 7.50
Duraplano 20* B-C	12.50
Topping 21* B-C	10.00
Ecroupe 45* C	12.50
Melton 24* B-C	9.95
Fireball 36* B-C	10.00
Ruzz 30* C	8.95
Aero Puppet 24* A-B-C	9.95
Custom Cruiser 38* A-B-C	10.00
Control-Liners by Berkley	
P47 41* C	6.95
P51 37* A-B	7.90
Bat 32* C	4.95
Bug 17* A	2.95
Tiger Shark 36* C	4.95
Strato-Cat 36* A-B	9.95
Strato-Kitten 24* A-B	2.95
Super V Shark 24* B-C	4.95
Targan 28* B-C	10.75
P.D.Q. 24* A-B	5.00
Piper Skycycle 30* A-B-C	7.50
Falcon Speedster 25* B-C	6.45
Tether Strake 22* C	3.50
Dromer 20* A-B-C	1.95
Vee-Gee 18* A-B-C	10.00
Scale-Liners by Eagle	
P51H Mustang 29* A-B-C	4.95
F6F Hellcat 42* A-B-C	4.95
P47H Thunderbolt 42* A-B-C	4.95
Cyclone 38* B-C	4.95
Whizzer 30* A-B-C	7.90
Whizzer Deluxe 30* A-B-C	9.95
Falcon Sportster 29* B-C	5.45
Knight Twister 19* A-B-C	7.75
Baby V Shark 20* A-B	2.95
Miss Behave 54* A-B-C	3.95
Baby Miss Behave 24* A-B	2.95
Tether Sharpin 18* A-B-C	2.90
G13 30* B-C	7.95
Cadet 33* A-B	5.45
Stardust 26* B	10.00
Atomic 14 1/2* B	3.50
Naxion 40* B-C	7.50
Presto-Liner 20* A-B-C	5.95
Boochcraft 40* B-C	3.95
Tryo 26* B-C	3.90
Flicker 24* A-B-C	3.95
Waco 34* B-C	8.50
Waco Deluxe 34* B-C	10.50

U-CONTROL ACCESSORIES

100' Stranded Speed Wire	\$1.95
140' Stainless Steel Wire	.75
Perrycraft Swivel Tank	.75
Jem Control handle—pistol grip	3.95
Wood "Gun" Control Handle & Reel	2.95
Metal Control Handle	1.25
Wood Control Reel 5 1/2" diam.	1.25
Wood handles	.10
U-Control Horns	.75
U-Reely Deluxe Complete Control	7.50

Sullivan Accessory Kit

\$1.50

Snafu Accessory Kit

\$1.50

FLOAT KITS

Type 28 40" to 50" span planes \$1.00
30 up to 60" span planes 1.50
40 over 60" span planes 2.50

GAS BOOKS

Model Gas Engine Handbook \$1.00
Gas Modelers Guide 1.50
Gas Model Plane Construction 1.00
Control-Liners Bldg. & Flying 1.00
Model Airplane Design 3.75
Building & Flying Model Airplanes 2.00
Model Gas Engines 2.50
Model Aircraft Hand Book 2.50
Gas Models & Engines 2.00

MIDGET BOATS

Dolphin 21" A-B \$6.50
Commando 20" A-B 5.95
Sea Bird 24" B-C 7.90
Marlin 20" C 8.50
Rush 28" B-C 15.00

BOAT ACCESSORIES

Flywheels A or B, \$1.00; C, \$1.50
Stuffing Boxes 1/8" 1.25
3/16" 1.50
Single Struts 1 1/2" .80
2" .35
Collars 1/8" or 3/16" .35
Univ. Couplings 1/8" or 3/16" 1.25
Shafting 1/8", 1/16", 3/16", 1/4", 5/16", 3/8", 1/2", 5/8", 3/4", 1" .25
Props: 2 Bladed: 2 1/2" .50
3 Bladed: 3 1/2" .45
1 1/4" .50
1 1/2" .60
2" .80

X-ACTO KNIVES & TOOLS

#7 Airplane Knife .35
#5 Mat Knife 1.00
#6 Mat Knife (heavy) 1.50
#80 Whittlers Set 2.00
#40 Sander .50
#44 Saw 1.25
#48 Stripper 1.00
#1 Knife (light) .50
#2 Knife (heavy) .50
#1D Hand Drill (small) .75
#2D Hand Drill (large) .75

X-ACTO SETS

#62 (#1 & 2 & 12 Blades) \$2.00
#82 (#1, 2, 5 & 11 Blades) 3.50
#93 (#1, 2, 6 & 16 Blades) 5.50
#84 Hobbyset .75
#85 (#1, 2, 6, 44, 42, 40, 10, 20, 0" ruler, 10 drills, & 23 assorted blades) 12.00

FREE

32 page fully illustrated catalog devoted exclusively to gas engines, planes, boats, cars and accessories.

HOW TO ORDER

Send remittance in full (we prepay package and insure) or send \$1 and we ship C.O.D. same day for balance.

AMERICA'S HOBBY CENTER, INC.

"16 YEARS OF FAIR DEALING GUARANTEES YOUR SATISFACTION!"

Dept. MC47
156 West 22nd St.,
New York 11, N.Y.

MODELECTRIC COILS

"HI-EFFiciency" **3** New valuable features
FOUND IN NO OTHER COILS!

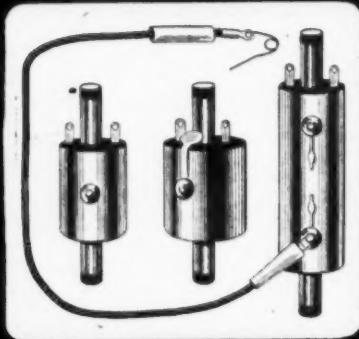
A Superior Coil designed by Specialized Ignition Engineers.
A Proved Product, by Laboratory and Field Tests.

- 1 The Modelectric SAFETY SPARKGAP
STOPS sparking inside coil caused by loose vibrating lead.
- 2 The Modelectric DESIGN-INSIDE-THE-COIL
Calculated for High Ignition Efficiency. Best for Starting. Best for High Speed. Best for Power.
- 3 The Modelectric SAFETY LEAD
Manually locked. It cannot come off until you unlock it.

Compare—BEST BY TEST—Compare
Test it on your Dealer's Tester

Modelectric MASTER Coil, 1 1/4 oz. \$2.75
Modelectric DE LUXE Coil, 1 1/4 oz. \$3.00
Modelectric TWO SPARK Coil, 2 1/4 oz. \$5.50
Modelectric RACER, 1 3/4 oz. \$3.00

Complete with Safety-Catch Lead
and MOLDED Plastic Coil Mount
Write for Complete Catalogue of Electrical Products



Modelectric Products Corp. ASBURY PARK, N.J.
"EVERYTHING ELECTRICAL AT MODELECTRIC"



CALLING ALL
CLASS A
ENGINE
OWNERS!

(Atom to
Ohlsson 23)

GET A GOJO!

IT'S the snappy little beauty, designed by Walt Wilson, specifically for your Class A Engine. And Walt, a World War II Navy man, has applied his brilliant experience as former chief designer of another of America's leading model companies, in bringing out a real sensation that in the best tradition follows modern Navy fighter lines. Span 14 1/2", length 16". Kit is absolutely complete, and features the new Wilport shade-coded plans for easier, quicker, more simplified building. A real flying partner for your Class A Engine—and only

\$2.95

See the GOJO, and other popular Wilport models, at your dealer's today—and
save 25c postage.

WILPORT MODELS 4115 Lancaster Ave.
PHILA. 4, PENNA.

under head machined from aluminum alloy and attached with four screws is a feature of the Super 35, while the other models have integrally-cast heads. The Twin turns a 12 in. diameter, 6 in. pitch propeller 9000 rpm; the Forty-Niner an 11 in. diameter, 8 in. pitch propeller 10,000 rpm; and the Super 35 an 11 in. diameter, 6 in. pitch propeller 9500 rpm. The Twin is designed for either beam or radial mounting.

Another addition to the quite large group of Class C engines with a displacement .604 cu. in. now on the market is the Anderson Spitfire, introduced by the Mel Anderson Mfg. Co. Brake horsepower tests of this engine have not yet been carried out, but it is rated 1/2 hp at 10,000 rpm and is stated to turn a propeller 13 in. in diameter at this speed. The compression ratio is 6 to 1, and bare engine weight is said to be 11 oz. Aluminum alloy die castings are used for the cylinder, cylinder head and crankcase. The cylinder is attached to the crankcase with four hex head bolts, and the head to the cylinder with eight machine screws. The drop forged aluminum alloy connecting rod has a bronze bushing at the lower end. Alloy iron is used for the piston and the cylinder liner. The crankshaft is provided with the type of ball bearing which takes care of both radial and thrust loads. The engine is of the two-port type with a shaft rotary valve and has a cylinder bore of 15/16 in. and stroke of 7/8 in.

A postwar model of the Mighty Midget engine has been placed on the market. With a 7/8 in. bore and a 3/4 in. stroke, this engine has a displacement of .451 cu. in. The compression ratio is 8 to 1. The crankcase, crankcase back cover, and exhaust stack are die castings. The cylinder, piston and connecting rod are of steel. The upper and lower rod bearings are chrome-moly steel and the main crankshaft bearing is bronze-bushed. The cylinder is threaded and screwed to the crankcase. Six bolts attach the aluminum alloy cylinder head to the cylinder. The propeller sizes recommended are 9 in. diameter, 8 in. pitch, or 12 in. diameter, 7 in. pitch for free flight. It is stated the engine turns these props 10,000 rpm.

Another engine again to appear on the market is the Madewell. A bore of .891 in. and stroke of .783 in. provides a displacement of .488 cu. in. For free flight a 13 in. diameter, 5 or 6 in. pitch propeller is recommended, which it is stated the engine will turn 10,000 rpm. The same speed is attained with a 12 in. diameter, 6 to 7 in. pitch propeller used for precision U-control. A speed of 9000 rpm is attained with a 9 in. diameter, 8 or 9 in. pitch propeller used for regular U-control operation. Bare weight of the engine is 9 oz. The cylinder is machined from alloy steel bar stock and attached with screws to the aluminum alloy crankcase, which is cast in a permanent mold. A cast iron piston and die cast aluminum alloy connecting rod are used. All bearings are bronze-bushed. The compression ratio is 5.24 to 1.

Viewed from the angle of the stroke-bore ratios used in the model engine field, the Cameron 23 is a relatively long stroke engine, the cylinder bore of 5/8 in. and stroke of 3/4 in. giving a ratio of 1.20 to 1. The engine has a compression ratio of 7 to 1, a bare weight of 5-3/4 oz., and is stated to turn a 10 in. diameter, 5 in. pitch propeller better than 9000 rpm. Gray iron is used for the cylinder and piston to provide the same coefficient of

expansion and permit a closer fit of the parts. A curved baffle and profiled bosses are features of the piston design. The cylinder is attached to the die cast Zamak alloy crankcase with four screws. Both the connecting rod and cylinder head are made of 17S-T aluminum alloy, the latter being attached to the cylinder with six screws. The main crankshaft bearing is made of 17S-T aluminum alloy. The timer has enclosed breaker points. Designed for either radial or beam mounting, this engine is of the three-port type.

An addition to the Class A model engine offerings is the Cobey-Waite, which has a displacement of 147 cu. in., is rated at 1/10 hp at 8500 rpm, and is stated to weigh 3-1/2 oz. The cylinder bore is .562 in. and stroke .593 in. A compression ratio of 4.50 to 1 is used. The steel cylinder is finished by honing and a piston of the same material is ground to a finish. Aluminum alloy is used for the cylinder head, connecting rod and crankcase, the latter being die cast. It is recommended that No. 30 oil be used for this engine, which operates on standard automobile gasoline and is designed for either beam or radial mounting.

Built in Connecticut, the Stenmoor Bobcat is a new .42 cu. in. die cast aluminum engine with steel cylinder liner and connecting rod, cast iron piston, and all bearings bronze-bushed. It weighs 7-1/2 oz., has a compression ratio of 8 to 1, and turns an 11 in. diameter, 8 in. pitch prop 10,000 rpm. The rotary valve is of the rear shaft type.

Another two-cylinder engine now offered is the Viking 65.2. Rated at 1/2 hp at 8500 rpm, this engine is of the very short-stroke type, the bore of .812 in. and stroke of .625 in. giving a stroke-bore ratio of .77 to 1. The die cast cylinder is provided with a steel liner and steel piston. Bare engine weight is given as 11 oz.

The specifications of the K. & B. Torpedo, produced by K. & B. Manufacturing Co., and the Torpedo Special, made by Miniature Motors Inc., are included in the accompanying tables. The former was listed in my previous article under "Torpedo," but the engine has since been redesigned.

With a bore of .711 in. and a stroke of .750 in., the Torpedo Special has a .298 cu. in. displacement. The honed alloy cylinder has double exhaust ports and the piston is Meehanite iron. The crankcase and connecting rod are aluminum alloy die castings and the latter is provided with a bronze bushing at the lower end. Provision of a bronze wristpin makes an upper rod bushing unnecessary. It is a rotary valve engine and weighs 7 oz.

Revised specifications of the Bullet, another engine made by the manufacturer of the Torpedo Special, also are shown in the tables. Including the new Vivell 35 already discussed, the specifications of three engines shown in my last article thus are presented in revised form.

Aluminum alloy die castings, a hardened and ground steel piston, and a honed cylinder are features of the Class B Pierce engine, which is rated at 1/5 hp. The crankshaft is machined from a solid steel bar, hardened and ground. This engine has a .297 cu. in. displacement and is equipped with a rotary valve.

Specifications of the Arden .199 engine, which are similar to those of the 099 model described in my last article, except for the cylinder dimensions, are included in the tables.

Design features of the new Orwick Class C rotary valve engine have been

G.H.Q. GASOLINE ENGINES
HAVE OVER 100,000
SATISFIED CUSTOMERS

SENSATIONALLY \$9.95
LOW PRICED

UNTIL JULY 1st
when price rises to \$15.00

Complete with coil, condenser and fully illustrated instructions.

*Factory Assembled
By Experts And
Fully Bench-Tested*



SPECIFICATIONS

4 Part 2 Stroke Cycle—
3/4" Stroke—
15/16" Bore—
300-7000 R.P.M.—
Bearing Surface, 1 1/4" Long—
Crankshaft, 5/16" Diam.
Motor Weight, 10 oz.—
Rotation, Either Direction
Invertible—
Runs on 2 Flashlight Cells—
Runs 27 Minutes on One Ounce of Fuel
Height, 4 1/2"—
Width, 2 1/2"—
H.P. Approx. 1/5th—
Displacement, .517 cubic inches
Class "C" under N.A.A. Rules

**EXCEPTIONAL ENGINE
VALUE — THE IDEAL
ENGINE FOR ALL MODELS**

IMPORTANT: Price only \$9.95 until July 1st. After July 1st, this engine will cost \$15.00

*Imagine—operating your own
G.H.Q. 1/5 Horsepower gasoline*

engine—tiny enough to put in the palm of your hand—yet turning up over 7000 rpm and powerful enough to fly model airplanes of from 5 to 10 foot wingspan. Also perfect for midget cars and boats.

Here is a scientifically constructed mechanical marvel that will thrill you with thousands of pleasure-packed hours. Get the real kick that goes with finger-tip control of the powerhouse that is your engine. OVER 100,000 OF THESE POWERFUL ENGINES ARE IN USE.

These 21 Features Make the G.H.Q. Gas Engine a Winner!

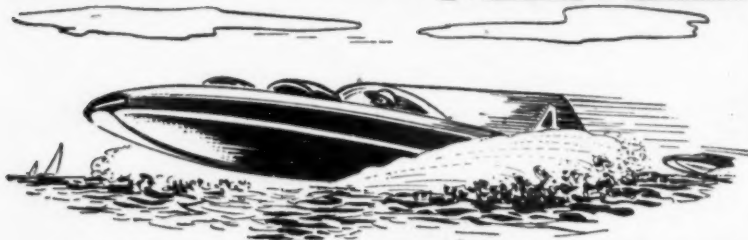
1. Easy starting.
2. Steady running—as long as gas, oil and spark are supplied.
3. Motor starts and runs on two flashlight cells.
4. Motor cannot overheat.
5. Piston and cylinder features: piston constructed on one piece, with uniflow battle and high compression head, centerless ground to within .0002". Cylinder is selected grey iron for long life, Hutto-honed to within .0001" of absolute roundness. Piston and Cylinder are hand fitted to insure perfect compression.
6. Accurate long wear aluminum die castings for cylinder head, crankcase, etc.
7. One-piece drop-forged chrome-nickel steel shaft, perfectly balanced and centerless ground. Absolutely unbreakable.
8. Main bearing (1 1/4" long) is reamed and lapped to perfect fit.
9. Connecting rod of high-speed bronze.
10. Carburetor is accurately designed—extremely simple to operate.
11. Timer assembly compact, tool-proof, long-wearing, replaceable and adjustable. Genuine tungsten points. Not a cheap "wipe" timer but a real aviation type "make and break" system.
12. Coil will not overheat or short circuit; convenient terminals make soldering unnecessary; oil, gas, and water-proof; not a pee-wee—but a husky, yet lightweight, spark coil that will give a maximum spark.
13. Condenser is gas, oil and water-proof.
14. Champion "V" Spark Plug and Washer.
15. Easily inverted and runs in either direction.
16. Absolutely safe—impossible to explode.
17. Speed range 300 to 7000 R.P.M.
18. Low gas consumption—runs 27 minutes on one ounce of fuel.
19. Strongest miniature motor.
20. ALL PARTS REPLACEABLE.
21. Simple, illustrated and fully detailed operating instructions.

SEND ONLY \$1. — We will ship Express Collect C.O.D. same day, or send \$10.20 and we ship parcel post, insured. On orders mailed after July 1st, price will be \$15.00.

G.H.Q. MOTORS Dept. M47, P.O. Box 193,
Sta. O, N. Y. 11, N. Y.

FREE: Send for our 32 page illustrated catalog showing hundreds of plane, boat and hobby items. No obligation to you.

The New Jet-Powered Sporting Model



**Build and Enjoy
This Super Model**

★
**Quick Change-Over
for**

**SPORTING USE
EXHIBITION MODEL**

Kit includes carved balsa hull, printed wood sheets, decal markings, plans, plastic canopy, plastic air scoops, sandpaper—everything you need. Get an Aqua-Jet kit today.

AQUA-JET

**Fast Action — Fun — Perfect Realism
in One Kit — Only 60 Cents**

Race it if you want to . . . using a carbon dioxide jet unit for power! Thrills and action galore and scale speeds up to 500 miles per hour. Or treasure it as a beautiful exhibition model of the newest type racing craft. However you use it, get started on the AQUA-JET at once. It's easy to build and the kit contains everything you need.

Ask for Aqua-Jet Kit No. B-6

If your dealer cannot supply, send 75 cents, which includes mailing costs for shipment from nearby dealer's stock.

MONOGRAM MODELS

M

MONOGRAM MODELS

MONOGRAM MODELS

2329 SOUTH MICHIGAN AVENUE, CHICAGO 18, ILLINOIS



for sustained
POWER
SPEED
efficiency

"little Demon"
[PATENT APPLIED FOR]
float-valve gasoline regulator

This precision-made float-valve gas regulator enables any engine to run steadily at top speed, and efficiency by maintaining a constant gas level. When gas mixture is adjusted for highest speed, the "Little Demon" will hold that speed until all the gas is used, whether a few drops or a gallon.

Whitehead products

725 SOUTH FAIR OAKS - PASADENA 2, CALIFORNIA

Enclosed is \$2.00 plus 3% sales tax if in California. Dealers please write.

NAME _____

ADDRESS _____

CITY _____

STATE _____

The "Little Demon" gasoline regulator is the size of a thimble and weighs less than one-third of an ounce. May be attached to any motor in five minutes.

Whitehead products
725 SOUTH FAIR OAKS - PASADENA 2, CALIFORNIA

revealed. With a weight of only 12 oz., this engine is stated to develop .754 hp. The cylinder and piston are machined from alloy steel, and the cylinder head and connecting rod from 24S-T aluminum alloy. The crankcase is an aluminum alloy sand casting. A Meehanite iron bearing supports the alloy steel crankshaft. The engine is designed for radial mounting, but extra lugs may be obtained for beam mounting.

In response to a request for further information regarding the Forster 29 and the horsepower tests of this engine described in my last article, the following reply has been received from Forster Brothers:

"Our repeated tests of the improved ball bearing Model 29 engine were made on a reaction dynamometer, using various sizes of props having various pitches. This gave us any number of desired points for our graph. We still have the original test engine in our shop and, if need be, can make the tests again to prove the accuracy of the curves submitted. We have found from past experience that power tests made on a reaction dynamometer and using propellers for a load are far more accurate in the case of miniature engines than when using a flywheel and prony brake. This is mainly due to the fact that the engine will steady down and pull a propeller load at an even speed at which the torque can be measured, while in the case of a flywheel and prony brake it is difficult to maintain an even speed long enough to get an accurate reading. At the time of the printing of our circulars before the war, the bare weight of the Model 29 engine without sparkplug and gas tank was just a little over 5-3/4 oz. Later we strengthened the castings here and there, which added a little more weight. The bare weight of the improved 29 engine with ballbearing crankshaft is approximately 6 1/2 oz."

Pole Cat

(Continued from page 34)

of maximum wing chord.

The aluminum cowl is made to fit over formers A, B and C. It can be held on with silk hinges to the top stringer. Add a small catch to the lower end to hook to the crutch.

The whole ship is now ready for covering. Go over the surface with very fine sandpaper in order to get a smooth covering job. After several coats of clear dope are added, apply the color.

The prop was carved from a 3/4" square block and only one blade used. This was balanced inside the spinner and worked excellently. The spinner is cemented in place and faired into the prop.

Test-flying this ship is much the same as any other; fly slowly at first. Launch with the ship held in the right hand and with the line pulled taut overhead, banking the ship away from the pole and gently launching downwind. Be sure to offset the engine at least 2° opposite the turn. Power should be added slowly—however, don't increase power if the ship starts to climb; instead move the weights forward until balance is perfect and then add power. In this manner you can get the ship to fly straight and level with maximum power.

When the motor cuts, the ship will spiral down until it is within reach and traveling slowly—then it is an easy matter to grab it. Even if allowed to swing around until the ship drops against the pole (the line should be cut so the model cannot reach the ground) no harm will be done.

A Fly-Away Model!

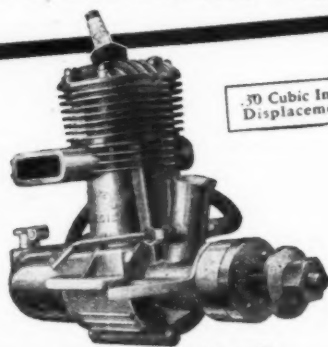


COMPLETE WITH MOTOR

FULLY ASSEMBLED—READY TO FLY—FLIGHT TESTED

Coming soon—Miniature Motors all metal scale model P-51, completely fabricated, with motor and all accessories necessary to fly it. This is the first time a complete factory built model airplane has been sold as a fly-away model. Just take it out of the box, fill it with fuel and fly it! The plane is flown in the usual manner with steel control wires which are also included as part of

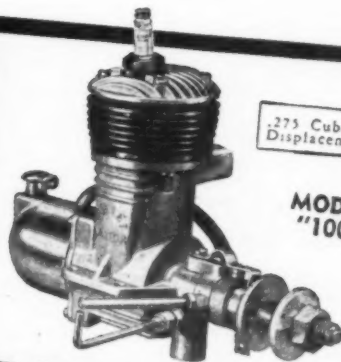
the equipment. In flight the model has unusual stability and excellent flight characteristics making it an ideal plane for the beginner as well as the advanced flier. This beautifully detailed plane is powered with the record making Bullet Motor.



30 Cubic Inch Displacement

TORPEDO Special

The newly engineered 1947 Torpedo Special is more powerful, better-looking than ever—a masterpiece of fine workmanship. Metals used are of the highest quality, scientifically selected, specially completely tested and fully guaranteed—final assurance that the Torpedo Special will give the record-breaking performance for which it is noted. Individually packed in a colorful self-displaying box attractively designed to help make extra sales. Retails (less condenser and coil) at \$1850



275 Cubic Inch Displacement

MODEL "100"

BULLET MOTOR

Bullet Motor gives more for the money in every way—exceptional appearance, highest quality materials, precision workmanship, easy starting. It is continually setting new records for both performance and dependability in free flight or speed contests . . . outstanding in its class. Each Bullet Motor is individually packaged in an attractive self-displaying box for real eye appeal. Retails (less condenser and coil) at only \$1500



Home of Miniature Motors

MINIATURE MOTORS

8557 Higuera Street • Culver City, California

MODEL AIRPLANE DESIGN

328 Pages 205 Diagrams and Plans
"2 Great Books in 1"

1. Complete Instructor on Model Flying

This comprehensive book by C. H. Grant teaches ANYONE to produce consistently fine fliers. Excellent for either beginners or advanced.

Answers 1,000 questions:

What wing section to use.
How large to make the stabilizer . . . the fin.
What center of gravity is . . . and how to find it.
And hundreds of other problems!

2. Basic Trainer for Aviation

Flight fundamentals are so thoroughly discussed that this authoritative work is recognized by Schools, Libraries and thousands in Air Forces and Aviation Industry. No other book affords better groundwork for aeronautics.

Complete \$3.75 postpaid

WYLAM BOOK 1

THE original and now famous first book of Wylam's Masterplans! Incorporates brilliant selectivity and attention to detail. Includes 14 perfect 3-views, 7 layout plans of 21 famous U. S. and foreign planes; 3 plans and text-instructions for Grumman F3F-1 and 2, Douglas O-46A, and Hawk 111-C; 3 of the much prized Wylam Engine Plans, Cyclone, Whirlwind and Twin Wasp Jr. . . all with detailed plans and text instructions. Price \$1.50.

WYLAM BOOK 2

ANOTHER complete Wylam work sparkling with "gems of realism" in scale model working drawings. This famous designer's execution is perfect . . . and he omits no detail on the big ship of engineering interest or significance. Yet so simplified are his Masterplans that a welter of "exhausting" original detail is cleared away. Includes full plans for: Wright Bros. Original Flyer, B-29, Airacomet, Northrop A-17A, Lycoming R-680 Engine, Black Widow, Martin A-22, Thunderbolt, Marauder, Vought Vindicator, Avro Lancaster I, Air Bombs, B-24, B-17, Fokker G-I, Mustang, World War I SE-5, Mitsubishi OB-01, PBV-5A Catalina, P-40 Warhawk, Grumman F6F-3 Hellcat, Curtiss Helldiver. Price complete only \$1.50.

FLYING SCALE MODELS

BEAUTIFUL new collection of detailed plans, photos and complete instructions for building SIXTEEN flying scale military planes. Designed by America's foremost flying scale modelers: Stahl, Weiss and Struhl. Also propeller design data and helpful construction hints. \$1.50 complete.

AIR AGE GAS MODELS

CREAM of Star Performers in one book! 21 complete Gas plans plus photos, full details, Sectional, National and International Winners by:

Stahl	Elhing	Murray
Struck	Conant	Struhl
Shulman	Schwab	Weathers
Talbi	Simmons	Abzug
Lanzo		Evalenko

Plans are clear, sharp, accurate. Full descriptions for building with A, B or C motor. Some Control-Line and Tailless construction. Also, fascinating instructive articles, suggestions. Postpaid \$2.00.

These five books are on sale at your favorite model and book shop . . . or direct.

COUPON

4-47

AIR AGE INC., 551 Fifth Ave.,
New York 17, N. Y.

Send postpaid a new edition copy of

() Wylam Book II	\$1.50
() Wylam Book I	\$1.50
() Flying Scale Models	\$1.50
() Air Age Gas Models	\$2.00
() Model Airplane Design	\$3.75
Send all 5 books for only \$9.00 (saving of \$1.25)	

Sorry, no C.O.D. orders!

Name _____

Address _____

City _____ State _____

Airways

(Continued from page 31)

sponsored by the American Legion, and details will be worked out in conjunction with the Institute of Air Age Activities and the Academy of Model Aeronautics.

Eliminations will be held in all 48 states and the District of Columbia; and if it seems advisable, regional contests will be held in 11 regions between the last of the State meets and the Nationals.

While the Legion holds the option on all these preliminary meets, it will be glad to hear from other interested groups who may wish to sponsor some of the meets. However, when this appears in print, all the meets will undoubtedly be definitely scheduled. Watch these pages for dates and locations.

Super Buccaneer is silk covered and is powered with a Baby Cyclone engine. It is now being trimmed up for 1947 competition work, has lifting tail and redesigned rudder and stabilizer. It is attractively finished with gold wings and tail unit with red tips and centersection trimmed with black. The fuselage is black with red cowl and fuselage flash.

John E. Cleland, Matthews 2, Harvard University, Cambridge, Mass. sent in No. 6 of his World War I SE5. He redesigned this biplane from Megow plans and powered it with an Atom. It has only a 24" wingspread and consequently provided John with several interesting flights. Although the fifth flight proved



Walt Schroeder (right), staunch supporter of radio program "Meet the Model Builder," shown with Jack Bayha, originator of the feature, during recent broadcast.

Picture No. 1 shows the first model which Alan S. Reed, 3261 Tullamore Road, Cleveland Heights 13, Ohio has built since returning from Japan. It is a speed rubber job. He is now working on a twin-fuselage rubber model which is also an original design.

J. C. "Madman" Yates, 942 N. Catalina, Burbank, Calif. sends in the excellent photograph No. 2 of his Lockheed Sirius taken by Art Moser. This scale model, powered by an Orwick engine, flies at 85 mph and weighs 4-1/2 lbs. He thinks that what makes this low wing airplane so stable in flight is the fact that the coil, batteries, switches and booster plug are all in the wing, thus bringing the C.G. pretty low. This model has won one 1st and three 2d place trophies in contests up to the time of writing.

No. 3 shows Victor G. Mathern's Waco cabin U-Control ship. Victor, of 7415 Roseberry Ave., Harrington Park, Calif. writes that he has been subscribing to MODEL AIRPLANE NEWS since 1932, but gives no details of his model.

Rigo Lindgren, Pensionatet, Ottenby, Sweden, sent No. 4 of his Fokker D8 which was built from M.A.N. plans and powered with an Eisefeld B 11/8 hp engine of German make. Victor tried out an "autopilot" of his own design on this model, and it worked so well that he now uses it on one of his speed models. He recommends the Fokker D8 for beginners.

No. 5 shows R. F. Fowler's pre-war model of his Super Buccaneer. Mr. Fowler, of 21 Somerford Grove, Park Lane, Tottenham, London N. 17, England, is an RAF veteran who read M.A.N. while he was stationed in South East Asia. His

to be the last, this model performed all kinds of aerobatics from a loop to a roll and a spiral dive. It weighed 12 oz., but the increased ruggedness gained proved well worth the extra weight.

Franco Bucio Ciprés, Huasteca No. 178 Col. Industrial, Mexico, D.F., sent No. 7 of his biplane which he built for U-Control. Unfortunately he gave no details on this ship.

No. 8 is a Class B indoor cabin ship built by Pete Andrews, 8602 63rd Drive, Forest Hills, L.I., N.Y., which won the AMA "B" record with the time of 17 m. 40.6 secs. at Kingsbridge Armory last fall.

No. 9 illustrates the all-time favorite model of Ray Daniel, Route 3, Belton, Tex. It is of original design and is powered by an Ohlsson 19. Wingspan is 30", and all solid construction gives it a weight of 26 oz. The highest speed Ray has been able to get is 66.44. The engine cowl is removable and batteries are inserted from rear of pod. The airscoop is an actual working supercharger. He writes that this is the most stable and easiest flying ship he has ever used.

John Mosca, 437 Rosehill Place, Elizabeth, N.J. sent in No. 10 of his diesel engine. It has a .199 cu. in. piston displacement and will swing a 10" prop with an 8" pitch at 4000 rpm. A dome piston is an original feature. John, who is a tool and die maker, writes that his 22 years of model building proved an invaluable asset in teaching him to read prints and drawings in his trade.

D. F. Galasneau, Portland, Oregon, submits No. 11 of his Rearwin Speedster, which was built from plans in May 1941 issue of M.A.N. Construction was started just after his release from service and

took the better part of two months. He is hoping for good flying weather so that he can try it out.

No. 12 is an excellent illustration of the ability, both as model builder and photographer, of Warren R. Watson, 308 E. Bonita Avenue, Baldwin Park, Calif. He assures us that this B25 really flies. It is powered by two inverted Ohlsson 23's, is all planked with balsa, and has a 55" wing with flaps that work with the aid of a third line. The cockpit and gun turrets are fully detailed. The high glossy finish which can be noted in the photograph took a month to complete.

NEWS OF MODELERS

René Tuthill, 105 Kent Street Salishan, Tacoma 5, Wash. would like to correspond with modelers interested in new designs, preferably originals. He would like to trade supplies with modelers in foreign countries where they are scarce.

Jimmy Ferguson, 2533 Daisy Lane, Fort Worth 11, Texas is anxious to start correspondence with fellow modelers, particularly those interested in U-control sailplanes and free flight.

Sven Eriksson, a 16 year old Swedish modeler, asks MODEL AIRPLANE NEWS to help him find an American model builder with whom he can correspond. Readers can contact him at Langalan 73, Sundsvall, Sweden.

Maurice W. Wilkinson, 21 Garturk Street, Glasgow S2, Scotland—D. J. Foreman, 8 Alloa Road, Goodmayes, Essex, England—and M. Starling, 67 Howberry Road, Thornton Heath, Surrey, England would like to exchange their current issues of *Aeromodeller* for current issues of MODEL AIRPLANE NEWS each month.

F. Gardner, 31 South Terrace, Sowood Avenue, Ossett, Yorkshire, England also makes the above request. And he would like to hear from Mr. H. Arnold, National City, Calif.

Peter V. Letts, an 18 year old RAF member, is another English modeler who desires to correspond with an American modeler. He writes that his interests are gliders and indoor and outdoor rubber models. He can be reached at: 108 Sandwell Road, Handsworth, Birmingham 21, Warwickshire, England.

David Valleley, 20 Mayfair Road, Crossacres, Wythenshawe, Manchester, England is anxious to resume activity as an aeromodeller after six years of service in the British Army. He has 120 copies of the British aeronautical journals, *Flight* and *Aeroplane*, dated from October 1945, and he states they are in good condition and contain fully detailed drawings of all the latest postwar British civil planes, military types, and jet and piston type engines. He would like to exchange these journals for copies of M.A.N. or other aero magazines dating from February 1940 to the present.

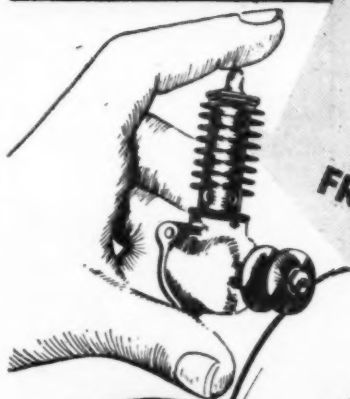
Cesar Aguiar Gama, Rua Xavier Da Silveira 45, Apt. 56, Copacabana, Rio de Janeiro, Brazil would like to correspond with other modelers.

CLUB NEWS California

Francis Stewart, Secretary, reports that the Bakersfield Gas Model Airplane Assoc. will hold its annual free flight contest on April 13, co-sponsored by Bakersfield Junior Chamber of Commerce. There will be \$500 in cash prizes along with trophies. The local merchants do their share in donating several hundred dollars in merchandise prizes every year. The contest will be held at Minter Field which has several thousand acres of very level hard

At Last...

POWER-FLYING WITHIN THE REACH OF ALL!



THE First
THE Only
IGNITIONLESS
EXPANSION TYPE
RECIPROCATING
Engine
FOR
FREE-FLYING

COMPLETELY
ASSEMBLED READY
TO FLY — NOT A KIT!
\$7.50
For models
up to 36"
Span

OK's NEW
CO₂
CARBON DIOXIDE

CO₂ SPECIFICATIONS
DISPL.0178 WEIGHT (Bare engine) 3/4 ozs.
BORE275 CARTRIDGE (filled) 1 1/4 ozs.
STROKE300 HOLDER 1/2 ozs.
R. P. M. 7,000 WGHT. (Engine accessories) 2 1/2 ozs.

PATENT
PENDING
WITH 14 CLAIMS



CO₂ must be seen to be believed!

CO₂ is OK's entirely new and different type of miniature engine which elevates any modeler (regardless of age or experience) to power-flying class! Even if you've never flown before—even if you've never been near an engine—you can fly a CO₂!

CO₂ is free of ignition complications! Conspicuous by their absence are: Spark Plug, Coil, Condenser, Battery, Booster and all wiring. Even timer and needle valve have been eliminated! Engine speed is adjustable but NO critical needle valve maneuvering required!

MAKE NO MISTAKE! CO₂ is a real engine all right! A real expansion type with reciprocating action. Includes regular 1 pc. steel cylinder (finned and ported) fitted with a real (and howl) piston, connecting rod, crankshaft and crankcase. Takes regulation prop and delivers in excess of 7,000 R.P.M. Yet so easy to set, start and fly, it's almost miraculous in simplicity and positive consistency.

Inspect CO₂ at your dealer—NOW—and see why we say it is the perfect engine choice for carefree, trouble free flying.

Compact CO₂ cartridge is all the "fuel" ever used. Eliminates tank-filling, priming, herkimization or evaporation. CO₂ is the modern, simple, carefree style in model flying.

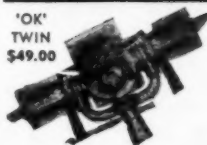
HERKIMER TOOL and MODEL WORKS, INC., Herkimer, New York

Export Office: 120 Wall St., New York 5 All Cables "Concordia", New York

DEALERS

CO₂ engines are ready for immediate delivery from your regular "OK" jobber. If not yet supplied, contact him at once! If initial demand has depleted his stock, reserve yours from fresh supply before rushed to him. For price, for quality, for size, for performance—there is no substitute for CO₂.

CO₂ MADE AND GUARANTEED BY MAKERS OF "OK" ENGINES



'OK'
TWIN
\$49.00



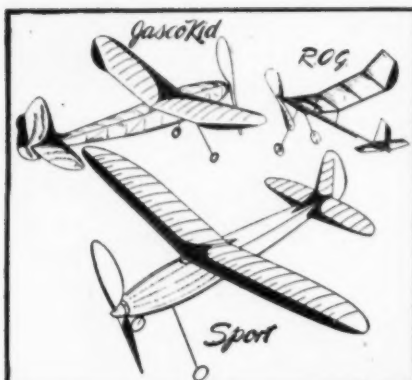
'OK'
29
\$15.50



'OK'
60
\$23.00



'OK'
COIL
\$3.00 & \$6.00



JASCO now presents a new series of rubber powered models in addition to the "THERMIC" glider line. These models are designed to be sturdy, practical and good flyers.

The "R.O.G." is a twelve inch model that can be flown in almost any room at home and outdoors, too when the weather is calm. The ailerons and rudder are movable.

Price 30c. at your Dealers. By mail 35c

The "JASCO KID", a twenty inch model that may be flown outdoors in light winds or indoors in a gymnasium or large hall. The propeller is free wheeling. The ailerons and rudder are movable.

Price 50c. By mail 60c

The "SPORT" is a Class C fuselage model. Wingspan 35 inches. It is a good model to start with to get experience for the coming National and International contests.

Price \$1.50. By mail \$1.60

The "THERMIC" gliders are constantly being improved and simplified to bring them up to date with present model design. For fun and records we believe a THERMIC glider is just the thing.

Trooper	65c
Thermic C	80c
Thermic 30	50c
Thermic 20	35c
Thermic 18	20c
Thermic Trio	35c

See your Dealer. By Mail add 10c

THERMIC CATALOGUE: Complete listing of all glider kits, including three view drawings. Yours for the asking. Just send a post card.

**JR. AERO
SUPPLY CO.**

203 East 15th Street
New York City 3



NOW!



try EXOL

Model Aircraft Power Fuel A Fuel Designed For Racing Engines

A scientific blend of highest purity ingredients, as recommended by leading model engine manufacturers. Contains no gasoline or petroleum fraction of any type. Lubricated by highest quality castor oil.

Get a bottle of EXOL from your dealer today. If he cannot supply you, send us his name and address.

RACING ENTHUSIASTS, ARE YOU GETTING SUCH PERFORMANCE?

We have just pulled down two Horner A.C. engines after ten hours running at top speed using EXOL fuel. Neither engine contained carbon nor stain of any kind. No part showed any wear, proving excellent lubrication. We have obtained speeds above 100 M.P.H. with this fuel and find it easy starting. We shall be glad to recommend EXOL, it is tops in all-round performance.

Yours very truly,
LONG BROS.,
(Signed) Richmond, Va.

**PRODUCTS
DIVISION
RICHMOND 2,**

Manufacturers of Racing Fuels for Two-Cycle Engines



**EXPERIMENT
INCORPORATED
VIRGINIA**

surface and, if the sun is shining, is thick with thermals. Last year 14 models were lost in thermals (not counting the ones that spun in on the asphalt runways). Club members found and returned all of these models within one week. The B.G. M.A.A. holds the all-time record on the coast for contestants for a single meet with 504 entries in 1940.

RAY ACORD reports the results of Los Angeles Aero Modeler's 21st Semi Annual Contest held on December 15, 1946.

Class A—1. Stuart Sittig. 2. Dennis Davis. 3. James L. Squire.
Class B—1. Robert F. O'Brien. 2. Ray Acord. 3. Jim Saffig.
Class C—1. Dan Lutz. 2. Frank Davis. 3. James Thompson.

Sweepstakes—Robert O'Brien.
Longest Flight—Jim Saffig.
Junior Trophy—Howard Bell.
Ladies Trophy—Doris Mitchell.

THE San Francisco Recreation Department announced the results of their hand-launched glider contest on December 20th in their bulletin, *The Third Dimension*.

Junior Division

Junior Glider—1. Larry Giordanengo and Ronald Jackson. 2. Aurella Doerner. 3. Orel Pierson.
Micro Glider—1. Larry Giordanengo. 2. Aurella Doerner. 3. Frank Jordan.

Micro Division

Junior Glider—1. Frank Pagano. 2. Jack Ritner. 3. Ronald Shewbridge.
Micro Glider—1. Ronald Shewbridge. 2. Al Ireton. 3. Paul Baker.

Class B Towline

Junior Division—1. Doug Smith. 2. Paul Forrester. 3. Noel de Nevers.
Micro Division—1. Frank Pagano. 2. Ronald Shewbridge. 3. Jack Ritner.

THE Northern California Model News reports that Bob Dollar received the coveted Sky Bug trophy at Santa Rosa with close competition from L. S. Cook, Al Fredrickson and Blair Mitchell.

These new officers were installed at a special meeting of E.M.E.S.: Pres. Jack Collier; Gen. Mgr. Walter Brown; Chief Clerk, R. C. Cushing; "O" Supt., Clifford D. Grant; "HO" Supt., Dr. Edward L. Scudder; Stock Clerk, Maurice Maede; Chief Electrician, Russell Ahnke; Director of Public Relations, James L. Munson; Editor, Philip C. Johnson.

Listed below is the 1947 contest calendar taken from Northern California Model News.

April 13—Free Flight—Bakersfield
April 27—Free Flight—San Diego
May 4—U-control—Los Angeles
May 11—Free Flight—San Bernardino
May 25—Free Flight—Fresno
June 8—Free Flight—Los Angeles
June 22—Free Flight—Oakland
June—U-control—Alameda
August—U-control—Palo Alto
Sept. 28—Free Flight—Oakland
Oct. 12—U-control—Los Angeles
Oct. 19—U-control—Albany
Dec. 7—Free Flight—Los Angeles

RESULTS of the Class "C" Catapult Glider challenge contest held at Livermore Airport by the Oakland Cloud Dusters are as follows:

1. Andrade, Blau and M. Demos. 2. Pop Robbers. 3. Pete Demos.

Results of the indoor hand launched glider challenge contest held in the Oakland Armory are:

1. Gordie Peterson. 2. Bob Blau. 3. Mike Demos.

F.G.M.A.C. reports the following results for their monthly contest held on November 24, 1946.

Class A—1. Roland Mosier. 2. Dick Beggs. 3. Jack Tiftick.
Class B—1. Al Bissonette. 2. H. Vincent. 3. M. Martin.
Class C—1. Ralph Mower. 2. M. Martin. 3. Ray Farrar.
Juniors—1. H. Vincent. 2. R. Mosier. 3. R. Balekian.

Results for their U-control contest on December 8, 1946 are:

(Turn to page 64)

Introducing THE MACVAL VIKING VARI-PROP



The adjustable pitch propeller, which complements the twin cylinder Macval Viking "65" engine, or any other model engine. Improve the appearance of your ship with this latest propeller development.



After that Crackup!

No need to buy an entire new propeller. Simply replace that broken blade with a new one...

Only **35¢** Each

Entire Propeller, including hub and 3 blades, 4 and 8 pitch.

\$2.35

Additional set of three blades for 6 and 10 pitch.

\$1.00

A California Corporation
Macval MFG. COMPANY
3223 Burton Avenue Burbank, Calif.

*Here's the News You've
Been Waiting For!
13 Months in Development!
Thoroughly Flight Tested!*

The MITE DIESEL

Compression Ignition

- * NO SPARK PLUG . save 1/2 oz.
 - * NO COIL save 1 3/4 oz.
 - * NO CONDENSER . save 1/2 oz.
 - * NO BATTERIES . . . save 2 oz.
 - * NO LEAD save 1/4 oz.
- total saving in wt.—5 oz.



\$18.95

Now it can be sold! Only after exhaustive tests, improvements in design, more tests, more improvements, until our designers and engineers were positive to the last infinitesimal detail that here was the finest motor that could be produced, were we willing to present the MITE to you. It's the first Diesel to have a positive engine cut off for free flight (adjustable to throttle down slowly for the last two seconds of power run, eliminating the critical dip and adding seconds and even minutes to flight time). First Diesel that can be throttled efficiently for free flight testing purposes (runs steadily at throttled-down rate of 1500 RPM). The MITE is so completely engineered that the fuel line is actually a metering valve for more efficient carburetion. We can say it with confidence—it's a great motor for a great gang of modelers! Get the MITE at your dealers for a new thrill in flying!

WHAT A SWEET PERFORMER!

- Best time 51 M.P.H. in control line.
 - Best endurance time 12 min. on 18 sec. run.
 - Power output 9000 RPM (8" dia. 8" pitch prop*)
- ON COMPARISON TESTS
MITE 9000 RPM
ENGINE "A"—4800—5000 RPM
ENGINE "D"—3500—3700 RPM
- Fixed compression 13 1/2 to one.

SPECIFICATION FEATURES:

- Bore and stroke .500
- Displacement .099
- Weight including tank 2 6/10 oz.
- Overall height 2 3/8 inches
- Dual exhaust

Mite Manufacturing Corp.

257 Water St., Brooklyn 1, N. Y.
Dept. MAN 4



FLASH WALLY WALICK

WINNER CLASS "C" OPEN SPEED
AT WICHITA WILL ENCLOSE

The exact diagram and complete instructions
on his Championship Prop with each order FREE.

BE FIRST — ORDER NOW

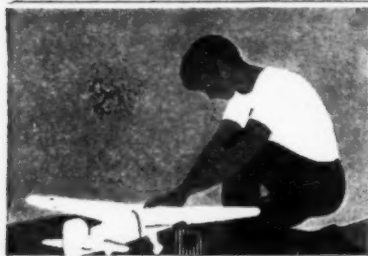
WE CAN SUPPLY ALL NATIONALLY ADVERTISED MOTORS,
ACCESSORIES AND KITS AT PRICES IN M.A.N. SEND

WALLY'S HOBBY SHOP

Dept. M-1, 1095 American Ave., Long Beach 2, California

\$1.00 COVERS C.O.D. OR SEND MONEY ORDER.

NO STAMPS



FOR
BOOSTER SERVICE

BURGESS BATTERIES

RECOGNIZED BY THEIR
STRIPES • REMEMBERED
BY THEIR SERVICE

FULL SIZE PLANS

Full size plans of the "Ghoul"—this month's M.A.N. feature model by Don McGovern. Ideal for sport flying or contest work, this sleek design with tricycle landing gear will impress you with its fine flying qualities. All ribs, formers and layouts printed full size, with easy-to-follow sketches and photos.

Plan G-8 35c Postpaid

PLAN PACKET NO. 1

G-1 Earl Cayton's "Bantam" free-flight glider.
G-2 Ehling's Monocoupe (control or free-flight).
G-3 Major Stolzenberger's "Swoose" sailplane.
G-4 Schoenbrun's famous "Gladiator" (Class B).

PLAN PACKET NO. 2

G-5 PV-1 Fighter (twin-boom pusher control-liner).
G-6 Dick Struhl's Experimental Tailless gas model.
G-7 "Mouse-Trap" Sensational "B" by Don Justice.
G-8 Don McGovern's tricycled "Ghoul."

1" = 1' SCALE PLAN PACKETS

PLAN PACKET NO. 21

G-21 Wiley Post's round-the-world "Winnie Mae."
G-22 Capt. Post's F6C-6 U.S. Navy racer.
G-23 Superdetailed Curtiss PG-E stunt biplane.
G-24 Grumman F2F-1 pre-War Navy biplane.

PLAN PACKET NO. 22

G-25 Superdetailed Curtiss F11C-2 "Goshawk"
G-26 Boeing F4B-4 biplane (P-12E & F4B-3 details also).
G-27 Hall-Springfield "Bulldog" Racer monoplane.
G-28 Curtiss F5C-2 "Sparrowhawk" fighter.

PLAN PACKET NO. 23

G-29 Ryan ST Sportplane. A realistic flyer.
G-30 The ever-popular "Knight-Twister" biplane.
G-31 Piper "Skycycle" low-wing single-seater.
G-32 Ben Howard's famous "Pete" low-wing racer.

Any single "G" series plan 35c Postpaid

Packet Nos. 1, 2, 21, 22, or 23 \$1.00 each

FOR THOSE DIE-HARD RUBBER MODEL FANS—
Earl Stahl's snappy P-51 "Mustang" flying model—
24" span. Plan FS-1 25c pp.

TO ORDER . . . Specify packet or single plan number. U.S. Postal Notes preferred. (When sending coins with single plan orders, please tape to a card slightly smaller than the envelope.) PRINT name and address.

P.S. Some of our "pre-war" plans (1/4" scale) are still available. Order from ads in July 42 M.A.N. News, Nov.-Dec. '42 Air Trails if handy, or send for latest listing of plans. (Give extra plan numbers on these orders, as some are already out of stock.)

P. O. BOX 143,
AIRCRAFT PLAN CO. Franklin Sq., L.I., N.Y.

Class A-B Speed—1. Francis Marshall. 2. Gene Webster. 3. Billy Price.
Class C Speed—1. Ronnie Silva. 2. Doug Roberts. 3. Vester Warner.

Precision—1. Jim Phillips. 2. Gene Webster.

They also announce election of the following new officers: Pres., Richard Beggs; Vice Pres., Henry Vincent; Recording Sec., Jack Tiftick; Financial Sec., Red James; Contest Director, Ralph Mower.

BRUCE PICKETT announces the formation of a new club, *Pomona Valley Model Airplane Assoc.*, whose officers are: Pres., Dean Landreth; Sec., Eugene Wood; Treas., Don Jones. This up and coming new club held a free flight meet in December with first place going to Orville Long. They also report a meet with a Glendora club in December in which Pomona took first place for rubber stick, towline glider, and free flight gas.

THE *San Francisco Model Aero Club* elected the following new officers: Pres., Bud Craighead; Vice Pres., Bill Binns; Treas., Wm. Mackerracher; Sec., J. Newhall.

NEW MEMBERS are welcome in the *East Bay Aeroneers Assoc.* Any model builder living in the East Bay area may attend only three meetings, then must apply for membership. Meetings are held every Monday at 8:00 p.m. at Rooth Hobby Hut, 6036 Telegraph Avenue, Oakland.

THE *Aeroneer* reported results of the E.B.A.A. monthly contest held on December 8th:

Class B—1. J. Volponi. 2. Jim Liebee. 3. Bill Steese.

Class C—1. Russ Watkins.

Listed below are the final E.B.A.A. point standings for 1946.

Class A—1. Jack Dyer. 2. Jim Liebee. 3. D. Verba.

Class B—1. Bill Steese. 2. Jim Liebee. 3. Don Foote.

Class C—1. C. Hubbard. 2. R. Watkins. 3. C. Doane.

Junior—Stan Stufflebeam.

THE *Golden Gators Model Aero Club* elected these new officers: Pres., Paul Tull; Vice Pres., James Heims; Sec., Don Bedell; Treas., Howie McDonough.

W. S. BISCAY of *Albany Control Flyers* writes that his club and the *Tethered Terrors* of Berkeley met with Richard E. Walpole, Manager of Regional Parks, to discuss establishing of a permanent Model Flying Field in Tilden Park. Mr. Walpole suggested an area adjacent to the Cricket Field which was agreed upon as being suitable, and plans are being made to grade this area to make three flying circles which will be ready about the first of March.

This Model Flying Field will be available to all model flyers who meet the safety rules of the sport and will be the center of model activities in the East Bay Area. At some future time a Model Race Car track and a Model Boat Pond will be added to make a complete Model Center.

THE *Penninsula Prop Twisters* put over a fine U-Control Contest on January 12th at San Mateo with the following results:

Class A—1. W. S. Biscay. 2. Mel Anderson. 1. Royce Van Bebbler.

Class B—1. Bill Thumber. 2. Roy Mayes. 1. Gillespie.

Class C—1. J. Swenson. 2. J. Pedracci. 3. W. Dunkum.

Crash—Snuffy Duffy.

Appearance—H. Smith.

Team—1. R. Heise and J. Swenson. 2. Don V. Ted Wilson, and Ed Bowley. 3. Bob White, Royce Van Bebbler, and Howard Puckett.

Yearly point standings (1946) are:

Class A—1. H. Vincent. 2. F. Mosier. 3. E. Beggs.

Class B—1. M. Martin. 2. R. Balekian. 3. E. Vincent.

Class C—1. R. Mower. 2. M. Martin. 3. E. Farrar.

Juniors—1. H. Vincent. 2. R. Balekian. 3. F. Mosier.

(Turn to page 66)

GOTHAM GIVES YOU MORE FOR YOUR MONEY

- ★ FREE POSTAGE
- ★ FREE PACKING
- ★ IMMEDIATE SHIPMENT
- ★ MONEY BACK GUARANTEE
- ★ WE HANDLE EVERYTHING

FREE

With each order of \$5.00 or more, we give you an autographed copy of our 176 page book "Model Airplane Engines" and a one year subscription to MODELS AND MODELERS.

Order from **GOTHAM**, the hobby company that is owned and operated by **Ex G.I.'s**. Below is a partial list of items we carry. Remember, we carry everything that is advertised in this magazine, so select what you want from our ad or any ad and use simple ordering instructions below. Price lists and order blanks will be sent free upon request.

GAS ENGINES

Arden .099... (Class A)	\$18.50*
Arden .199... (Class A)	23.50*
Marvin (Class A)	15.50*
Bantam A... (Class A)	18.50*
Bullet (Class B)	12.75
Ohlsson 23... (Class B)	16.50
Cannon 300... (Class B)	19.75*
DeLong 30... (Class B)	19.50*
Forster 29... (Class B)	24.75*
Hurricane ... (Class B)	19.75*
Melcraft (Class B)	18.50*
Merlin (Class B)	18.00*
Rogers 29... (Class B)	15.75*
Hornet (Class C)	35.00*
Cannon 358... (Class C)	21.50*
Dennymite ... (Class C)	15.85
Ohlsson 60... (Class C)	18.50
OK Super 60... (Class C)	21.00*
Rocket (Class C)	22.50*
Vivell 35... (Class C)	18.00
McCoy (Class C)	35.00*
Pacemaker ... (Class C)	24.95*
Mite Diesel ... (Class A)	18.50
Drone Diesel (Class B)	21.00
Mova Diesel (Class A)	21.50



OHLSSON '23'
\$16.50



BANTAM A
\$18.50



PACEMAKER '51'
\$24.50



BULLET B
\$12.75

Minijet (Jet Propulsion) 35.00
*Includes coil, condenser, high-tension lead, and ignition wire.

GAS MODEL PLANES

GOTHAM carries every gas kit of approved design and tested performance. Careful handling and prompt shipment. Satisfaction guaranteed.

FREE FLIGHT

Coronet (A-B)	.....\$2.50
Javelin (A-B)	.....3.95
Ranger (A-B)	.....3.00
Roamer (A-B)	.....2.95
Zemby (A-B)	.....3.00
Comet Interceptor (A-B)	.....3.95
Strato-Streak (A-B)	.....2.50
Brigadier 38 (A)	.....1.95
Stanzel Interceptor (A-B)	.....2.95
Skyrocket Super A	.....2.95
Buccaneer B	.....3.95
Playboy Jr. (B)	.....2.50
Varsity (B)	.....3.95
Brooklyn Dodger (B-C)	.....3.95
Comet Zipper (B-C)	.....5.95
Airfoiler (B-C)	.....3.95
Master Crusader (B-C)	.....7.50
Shulman Zoomer (B-C)	.....6.95
Bay Ridge Pacer (C)	.....4.95
Buccaneer C	.....6.95
Mercury (C)	.....5.50
Playboy Sr. (C)	.....4.50
Comet Sailplane (C)	.....8.95
Capitol Flamingo (C)	.....9.95
Super-Sunduster (C)	.....8.95
7-Foot Stinson Reliant, (suitable for radio control)	.....15.00

AND ALL NEW ONES

CONTROL LINE

Tether Streak (A, B, or C)	.....\$3.50
G-13 Biplane (A, B, or C)	.....7.95
Baby V Shark (A or B)	.....2.95
Capitol Navion (A, B or C)	.....7.50
Comet Whizzer (A, B, or C)	.....9.95
Dreamer (A, B, or C)	.....7.95
Strato-Kitten (A or B)	.....2.95
Baby Miss Behave (A or B)	.....2.95
Girard Globe Swift (B)	.....7.50
Scientific Atomic (B)	.....3.50
Bipe (B or C)	.....3.95
Falcon Speedster (B or C)	.....5.95
P-47 Thunderbolt (B or C)	.....5.95
Super V Shark (B or C)	.....4.95
Super Stratojet (B or C)	.....5.95
Beechcraft (B or C)	.....9.95
Whirlwind (A, B or C)	.....7.95
Topping 100 (B or C)	.....10.00
Curtiss P40F (B or C)	.....9.00
Scientific Cyclone (B or C)	.....4.95
Eight Ball (B or C)	.....6.95
Fireball (B or C)	.....10.00
Flicker (A, B or C)	.....3.95
Eagle Waco (B or C)	.....10.50
Miss Behave (B or C)	.....3.95
Tarpon (B or C)	.....10.75
Formacraft P-39 (B or C)	.....12.50
Capitol Skycycle (B or C)	.....7.50
Demeco Special (C)	.....7.95
Tiger Shark (C)	.....4.95

ACCESSORIES

Battery Box (all sizes)	.....\$ 40
Aero Coil (Featherweight)	.....2.50
Aero Coil (Quality)	.....3.00
Smith Competitor Coil	.....1.95
Arden Coil	.....2.50
Wilco Coil	.....1.95
Metal Condenser	......35
Paper Condenser	......20
Ignition Wire (per foot)	......03
High Tension Lead Wire	......20
Penlite and Flashlight Cells (each)	......10
Spark Plugs (all sizes)	......50
Arden Booster Jack	.....1.50
Toggle Switch	......50
Aligator Clips	......12
Vitamite Wet Cell	.....2.35
Power-plus Minicell	.....2.25
Power-plus Superfilite	.....2.95
Austin Flight Timer	.....1.50
Universal Needle Valve Assembly	......50
Control Wire, 140 ft.	......75
U-Reely Control	.....7.50
Jem Control Handle	.....3.95
4-Way Plug Wrench	......15
Neoprene Tubing (per foot)	......35
Froom Gas Tank	.....1.00
U-Control Swivel Tank	.....2.50
Spinlet Engine Starter	.....4.00
2 Blade	.....6.00
3 Blade	.....6.00
Aluminum Engine Mounts A & B	......35
Aluminum Engine Mounts C	......60
Flo-Torque Gas Props (8" to 14")	......50
Flo-Torque Hi-Ball Props (13" and 14")	......65
Xcell Props (High Pitch) (8" to 11")	......75
Topping 10" Multi-pitch Prop	.....1.50
Topping 12" Multi-pitch Prop	.....1.75
Topping 3 Blade Plastic Props	.....1.50
Plastic Spinner 1 1/2"	......50
Plastic Spinner 2"	......75
Sponge Rubber Wheels 2 1/2" (pair)	......40
2 1/2" (pair)	......50
3 1/2" (pair)	......60
Mounting Nuts and Bolts (per set)	......10
Silkspar (per sheet)	......10
Trexler Balloon Wheels 2 1/2" (pair)	......60
3 1/2" (pair)	.....1.25
3 1/2" (pair)	.....1.50
SAE #70 Oil (Pint Can)	......70
X-acto Knife Set #83	.....5.00
X-acto Tool Chest No. 84	.....7.50
X-acto Tool Chest No. 85	.....12.50
Rubber (per foot)	......03
Celluloid (per sheet)	......10
Camel's Hair Paint Brush	......10
Cement (Pint Can)	.....1.00
Dope (Pint Can)—Clear, Green, White, Light Blue, Sky Blue, Dark Blue, Silver, Sand, Olive, Yellow, Brown, Grey, Black, Red, Orange	.....1.00
Flywheel (Class A)	.....1.25
Flywheel (Class B)	.....1.50
Flywheel (Class C)	.....1.75
Comet Top-Notcher	.....1.00

GAS MODEL BOATS

Marlin 28"	.....\$7.50
Sea Gull 26"	.....12.00
Sea Bird 24" (includes hardware)	.....8.50
Reuhl Bakelite Hydroplane complete	.....15.00

SCALE MODEL BOATS

Ideal Models	
Cruiser Augusta	.....\$1.50
Oil Tanker	.....1.50
Liberty Ship	.....1.50
Destroyer O'Bannon	.....1.50
Destroyer Escort	.....1.50
Battleship North Carolina	.....1.50
Liner America (Now West Point)	.....1.50
Mosquito Boat	.....3.00
U. S. Submarine	.....3.00
Tug Boat	.....3.50
Sovereign of the Seas	.....3.50
Cutty Sark	.....3.50
Schooner Bluenose	.....3.50
Oil Tanker	.....4.00
Coast Guard Cutter Campbell	.....4.00
Destroyer Preston	.....4.00
Submarine Chaser	.....4.00
Rex	.....7.50
Queen Mary	.....6.50
Normandie	.....8.50
U. S. S. Kearsarge	.....8.50
U. S. Liner America	.....8.50

MILITARY SOLIDS

Buildozer	.....\$1.25
40 MM A.A. Gun	.....2.95
Weasel	.....2.95
U. S. Army Jeep	......75
Amphibious Jeep	......75
Westcraft Jeep	.....2.50
Westcraft Scout Car	.....2.50
Ace Truck	.....1.00
1 1/2 Ton Truck	.....1.25
2 1/2 Ton Truck	.....1.50
Station Wagon	.....1.25
Half-Track	.....1.50
Covered Wagon	.....1.50
Stage Coach	.....1.50
Tractor	.....1.50
Navy Landing Craft	.....1.50

SOLID MODEL PLANES

Aircobra XP-39	.....\$2.50
Curtiss P-40	.....2.50
Focke-Wulf FW-190	.....2.50
Grumman Wildcat	.....2.50
Hawker Hurricane	.....2.50
Lockheed Hudson De Luxe	.....2.50
Boulton Paul Defiant	.....2.50
N. A. Mustang	.....2.50
Republic Thunderbolt	.....2.50
Spitfire	.....2.50
Grumman Avenger	.....3.00
Consolidated B-24	.....6.50
Boeing B-17	.....7.50
Super Fortress B-29	.....2.50
Corsair	.....3.00
Helicat	.....3.00
Martin B-26	.....3.00
Mosquito De Luxe	.....4.00

HOW TO ORDER FROM GOTHAM

It's simple—because you don't pay for packing, postage or any other "charges." Just write down what you want and the price and send a money order or check, or send only \$1.00 and we ship C.O.D. for balance. It's easy! It's quick! Minimum order \$1.00.



\$1.50

A BRAND-NEW WORTHWHILE BOOK!

MODEL AIRPLANE ENGINES, an information-packed, 176-page book devoted exclusively to miniature gasoline engines. Now available for only \$1.50. No previous knowledge needed! Here's the complete explanation of construction and operation of model engines in easy-to-understand, interesting language. Photos and charts make it crystal-clear! Covers everything from design and operation to performance and trouble-shooting. Just the thing to help you win contests by showing you the knack of increasing power and speed and getting better overall performance from your engine. It's a terrific bargain—only \$1.50! Order yours today!

GOTHAM HOBBY CO., 107 East 126th St., New York 35, N. Y.

IT'S NEW!

Still More Speed and Power with a MODEL DIESEL ENGINE!

Fly your plane with that new kind of engine. Lighter in weight! Because no batteries—no coil—no condenser or spark plug is necessary.

Bore .629 inches
Stroke .787 inches
Weight 8 ounces

Very easy to start by hand! Excellent performance up to 25000 R.P.M. with a fly-wheel. Easily built (only 14 parts) with ordinary home workshop equipment (lathe).

For Complete Plans and Instructions Send 2 Dollars by airmail to:

O. AMREIN

Wattstrasse 8, Basel, Switzerland

Strictly for BEGINNERS!

Starting in the next issue, MODEL AIRPLANE NEWS will feature a new department: "Model Airplane Course for BEGINNERS". Newcomers will find this feature extremely helpful in getting started in the greatest of all hobbies . . . Get your copy of May, 1947 issue.

MODEL AIRPLANE NEWS

DEALERS!

Lowest Balsa Prices Ever Offered
COMPARE—THEN BUY GRADE A
PRECISION CUT. IMMEDIATE DELIVERY

3/8" Balsa	Per	Per	3/16"	4.90	7.00
Stripes	100	1,000	1/4"	5.80	8.90
1/16x1/8	.28	\$ 2.00	3/8"	8.20	11.20
1/16x1/8	.24	3.20	1/2"	11.00	16.00
1/16x3/16	.48	4.00	All blocks cut to order		
1/16x3/8	.75	7.25	CEMENT OR DOPE		
1/16x3/4	.98	9.80	1 gallon	\$2.00	
3/32x3/32	.28	2.25	32 Stranded Ignition	2x	
3/32x3/16	.48	4.25	Wire, per ft.		
3/32x1/4	.88	5.35	Special New McCoy		
3/32x3/8	.98	8.50	45" Engine 25.00		
3/32x1/2	1.20	11.00	GAS MODEL KITS IN		
1/8" x1/8"	.40	3.50	STOCK		
1/8" x3/16"	.48	4.80	Ranger's One See		
1/8" x1/4"	.85	7.50	U-Control	\$2.95	
1/8" x3/8"	1.20	10.80	Ranger's Lander	3.95	
1/8" x1/2"	1.70	14.00	U-Control	5.95	
3/16x3/16	1.80	16.00	Vet Aero's Sunduster	5.95	
3/16x1/4	1.00	8.00	C Free Flight	5.95	
3/16x3/8	1.20	10.00	Wilco "A-B" Free		
3/16x1/2	1.80	16.00	Flight	5.95	
1/4" x1/4"	2.20	20.00	Hambo paper (24 sheets)		
1/4" x1/2"	2.20	20.00	Blue or Green 24"x36"		
1/4" x3/4"	2.80	24.00	\$13.00 per 100 sh.		
1/4" x1"	3.20	28.00	\$3.20 per 100 sh.		
1/4" x3/4"	2.80	24.00	White Silspan 24"x36"		
3/8" Balsa Sheets—Per 100			\$16.00 per 500 sheets.		
1/16"	\$3.10	\$4.80	\$4.50 per 100 sheets.		
3/32"	3.50	5.30	5.70 per dozen sheets.		
1/8"	4.20	9.60			

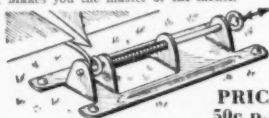
All prices are net. All orders shipped express collect. Send money order or check with order. We also stock other items at regular discount. Write us your needs. No order too small. Dealers in New York City.

BROOKLYN AERO SUPPLY

2815 Neck Road, Brooklyn 29, N.Y.

"MAECO STOOGEE"

The perfect release for all types of models. Compact, foot-proof, adaptable to all kinds of flying. Prevents accidents, broken props and fingers. You fly when you want. Makes you the master of the model.



PRICE
50c p.p.

The only modification needed is a small hole on the bottom fin or a loop on the wire axis. The "STOOGEE" can be fixed to ground, board, side of tool box or any way most convenient to you.

CONSTANT-FLOW GAS TANK

Designed and proven for control line aerobatics, inverted flying, high speed. Utilizes normal forces to supply fuel under constant pressure to the last drop. Complete, ready to use. Instructions. \$1.00 postpaid. Ready, late March.



DEALERS AND DISTRIBUTORS inquiries invited

MODEL AERO ENGINEERING CO.

P. O. Box 1953, Magnolia Park Sta., Burbank, Cal.

Illinois

The T. M. Stoner Model Club of Aurora invites all modelers in the Fox River valley to join their club. Contact Hart G. Betts, 7 Fox Promenade, Aurora for full details.

Kansas

The Mid States Model Aeronautical Assoc. reports election of officers for 1947: Pres., C. O. Wright; Vice Pres., O. L. Elbring; Sec.-Treas., Al J. Hummel.

Dope Fumes, official monthly publication of Wichita's East Side YMCA Hy-Flyer Clubs and Mid States Model Aeronautical Assoc. announce the formation of a new club called Newton Hy-Flyers at Newton. J. J. Kroeker, Pres. of the new group, acted as Contest Director for their first meet, an indoor affair at Lindley Hall. The club meets in the "Y" Building at Newton on Wednesday at 7:30 p.m.

The following were elected by Boys' Farm Hy-Flyers: Pres., Benny Aebly; Vice Pres., Bob McCoy; Sec., Harold Krause; Reporter, Harold King.

THE Men's Eagle Hy-Flyers Club re-elected their officers at a semi-annual election: Pres., Bill Bain; Vice Pres., Frank Manley; Sec.-Treas., Jay Osborne; Sponsor, E. Linn.

Louisiana

The Shreveport Modeleers Club will sponsor a spring contest to be held April 13th (Alternate date April 20th) in Shreveport. It will be the "South-Central Regional Control Line Contest." They hope to have prize awards of approximately \$800 in value. The last contest held on September 8, sponsored by Shreveport Kiwanis Club, attracted 65 contestants. The Shreveport Modeleers Club has now installed its new officers who are: Pres., Sgt. Robert V. Mann; Vice Pres., Robert Earl DeLoach; and Sec.-Treas., Tom Philpaw.

Massachusetts

The Boston Speed Demons formed a new club with the following officers: Pres., William Creighton; Sec., Earl Richards; Advisor, Al Green; Contest Director, Esio Grassi. Meetings are held at 24 W. Tremlett St., Worcester, on Thursdays at 7:30 p.m. New members are welcome. Prizes are awarded every three months on a point total basis. Inter-club contests are held every two weeks at the Franklin Park Golf Course.

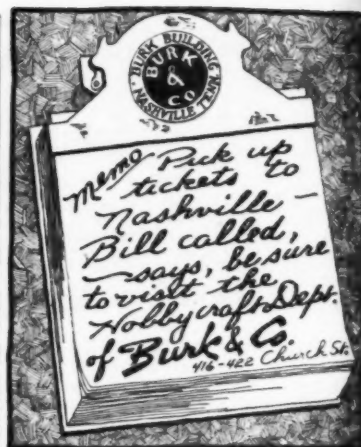
ANOTHER NEW Massachusetts club is the Blackstone Valley Gas Modelers. Officers elected are: Pres., Al Jemlick; Vice Pres., Jerry Baghdasarian; Sec.-Treas., John Curran, and Club Photographer, Philip Dion. Flying sessions, both free flight and control line, are held at Uxbridge Fair Grounds every Sunday, weather permitting. Meetings are held bi-monthly at the Boy Scout Headquarters.

Michigan

Harvey C. Varnum, Secretary, reports the formation of a new club, Ann Arbor Airfoilers, which has a monthly paper known as Airfoiler's News.

New Jersey

The N.Y. Society of Model Engineers, Lackawanna Terminal, Hoboken, announces that a space fifty feet square is being set aside for inclusion of a model race track for testing and racing miniature power boats, planes and racing cars in the upper concourse. Constructed with a water-tight rubber basin as a base and a removable platform to cover the "half-doughnut" shaped water course, the race track provides a circular path some 35 ft.



EVANSTON'S



HAS Everything in IT!

MODEL AIRPLANE NEWS!

HOME OF THE EVANSTON CONTROL LINE CLUB

ORDERS P. P.—NO C. O. D.

1502 Sherman

Evanston, IL

MODEL AIRPLANE NEWS

. . . by subscription is only
\$2.50 for 1 year
4.00 for 2 years

RUBBER!

Exactly the same as the Power-Packed
Pre-War Midwest Contest Rubber.

IT'S BACK!

225 foot Skeins, 1/4 x 1/30 \$1.40—
3/16 x 1/30 \$2.10. 1 lb. spool contains 2 skeins of 3/16 or 3 skeins of 1/4. \$4.00 per spool. Postpaid in U.S.A.

Dealers write for prices.

MIDWEST MODEL AIRCRAFT
445 W. 69th St.
CHICAGO 21, ILLINOIS

in diameter for boats and cars. Through an ingenious arrangement of a center-pole, wires and pulleys, airplane "sputter-bugs" may sit outside the track area in an airplane cockpit and control their planes using the wood platform as a landing field.

THE Exchange Club of Elizabeth held their Model Airplane Flying Carnival at Elastic Stop Nut Field, Union, on January 8th, with the following results:

Class C Speed—1. Ernest Babcock, Jr. 2. William Tooley. 3. Henry P. Laureys.

Class B Speed—1. Francis McElwee. 2. Peter Schenberger. 3. Robert Schwanhauser.

Class A Speed—1. Thomas F. Osiecki. 2. Ernest Babcock, Jr. 3. Matty Kania.

Stunt Event—1. Ernest Babcock, Jr. 2. Don McGovern. 3. Johnny Diehl.

Jet Speed—1. Dick Mahoney. 2. James Fitzpatrick. 3. John Wardlow.

Scale Model Flying—1. Artie Hasselbach. 2. Francis McElwee. 3. Ernest Barth.

High point winner of the meet was Ernest Babcock, Jr. who won a Cushman Motor Scooter. The snow was plowed from the field by three members of the Linden Model Club.

NEW YORK

William Fletcher, Secretary, reports that Prop Spinners Club, Elmhurst, is now formulating plans for its Eighth Annual Northeastern Championships Model Airplane Contest. The date is to be August 3; the site, the familiar east coast modelers' heaven, Hicksville Flying Field, Hicksville, L.I. Events are: separate Classes A, B and C free flight gas and a combined class towline event. Prizes valued at \$500 to \$800 will be awarded to at least 15 entries in each event. The Northeastern Championships Perpetual Trophy again will be awarded to the contestant amassing the highest number of points in each of the four events.

THE Syracuse Model Airplane Club started its 14th year under Exchange Club sponsorship with the following elected officers: Pres., Denny deLaroche; Vice Pres., Ed Izzo; Sec., Herb Sennert; Treas., Andy Nicholas. Meetings are held at the First Presbyterian Church, 620 W. Genesee St. each Friday at 7:30 p.m. Prospective members are urged to come to a meeting and get acquainted.

SINCE THE postwar Constitution has been drawn up and voted on, the New York Aeronauts is making a drive for added membership. Those interested (active flyers only) are requested to write to Bernard Schoenfeld, 11 Cornelia St., New York, N.Y.

NORTH CAROLINA

Don T. Howell, Corresponding Secretary, writes that the Piedmont Modelaires of Concord and Charlotte, held their 1947 election on January 8th with the following results: Pres., R. L. Deal; Vice Pres., Jimmy Kilgore; Sec.-Treas., John Hopkins; Corresponding Sec., Don T. Howell; Publicity Mgr., H. Lester Ritchie, Jr.; and Sgt. at Arms, John Ritchie. Plans were started for the 2nd Annual Dixie Championship Contest for free flight, and a tentative date was set as August 31. The Dixie contest will be open to any contestant who can get there.

Sherman M. Spector of Havelock has written for information on starting a gas modelers club. Interested modelers in his area should contact him.

OKLAHOMA

Mrs. Nadine Hay, Sec.-Treas., reports the formation of a new club, the Propellers, with the election of officers as follows: Pres., Hank Hay; First Vice Pres., Don Clingan; Second Vice Pres., Jake King; Sergeant-at-arms, Jake King; and Sec.-Treas., Nadine Hay. This new club is

WESTERNER

13 PRIZES in 4 CONTESTS

Don Foote's spectacular design—A CHAMPION IN EVERY CLASS! A rugged, dependable design with performability which made it the coast's leader! Unusual, too, for it's simplicity in construction! Expert or beginner achieves the same wonderful, flying model! 2 profusely illustrated, easy-to-follow instruction books included. (1) BUILDING INSTRUCTIONS, and (2) FLYING INSTRUCTIONS by Champion Don Foote.



Complete with 2 Books:
(1) BUILDING INSTRUCTIONS
(2) FLYING INSTRUCTIONS

Class "A" Wingspan 50 1/2 inches \$3.50

Class "B" Wingspan 41 inches \$4.50

Class "C" Wingspan 36 inches \$5.95

Your Dealer Features These



for A, B or C ENGINES

The saucy "MITE-BEE" is the ingenious kit - design from which you can build any of 5 popular control line models for "A" or "B" or small "C" engines. Kit contains all the necessary wood, printed sheets, plywood, hardwood mounts, formed landing gear, etc.

MONOPLANE Ideal Trainer
BIPLANE Stunt Flyer
MONOPLANE Hot Speed Job
BIPLANE Gullwing Design
MONOPLANE Sleek Sportster

5-IN-1 Controline

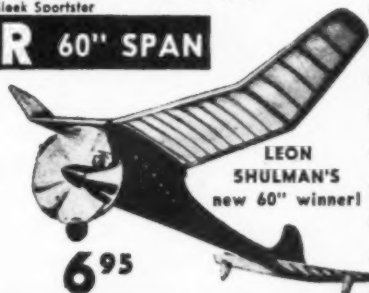
"MITE-BEE"

"Sharp" 24" wingspan, 20" long. Super detailed plans with full size working drawings, detailed instructions and perspective construction sketches plus 5 DIFFERENT 3-view drawings for each model. MITE-BEE is just right — and "just perfect" for control flying.

ZOOMER 60" SPAN

ZOOMER

Leon Shulman really "opened his bag" of construction tricks in working out this new design to bear his name! High-wing, tapering fuselage tail imparts a sensational high rate of climb with low and slow sinking speed. Light, graceful, easy to build from the super-plans and will do wonders with a class "B" or "C" engine or diesel. ZOOMER is a full 60" span "job" really rugged and a contest-winning design!



LEON SHULMAN'S new 60" winner!

6.95

T-56 CHAMPIONSHIP BROWN RUBBER

BACK AGAIN! The original, pre-war CHAMPIONSHIP Rubber Thread. Almost limitless endurance for those "extra" winds. "T-56" holds almost every record in the book! Yours, now, in 2 contest widths: 1/4" (1c foot) and 3/16" (1 1/2c foot).

NEW 64 PAGE CONTROLOG

An up-to-the-minute "WHO'S WHO" of all leading control line kits: Illustrations, specifications and cost. INSTRUCTIVE ARTICLES on history of "U" CONTROL; ADJUSTMENT AND FLYING CONTROL LINE CRAFT! 15c, also: SOLID MODEL AIRPLANES — 64 page catalog-manual 15c; POLK'S SHIPYARD 160 pg. "boat model" book (incl. refund coupon) 35c.



DEALERS: Set your "pipeline" to Polk's for fastest service, from largest stock of latest items (many exclusive!) One order, one shipment, one bill to check saves you time, money and handling overhead. Request latest "PYLON" (circulation limited to dealers, so write on letterhead, please). Write to either of our 2 central-dealer service warehouses:

POLK'S MODEL CRAFT HOBBIES

World's Leading Hobby Store

314 FIFTH AVE., NEW YORK 1
235 S. WABASH, CHICAGO 4

Pacific Ace Is Back!

30-INCH WINGSPAN!

Rubber-powered. Flies like a two dollar job! Send for your Pacific Ace Kit today!



VEE GEE

FAMOUS U-CONTROL SPEEDSTER

When a Vee Gee's on the business end of your control lines, you're headed for 100 MPH or better! De Luxe kit, all parts shaped and beveled to sanding distance. Exploded drawing, full size plans. Kit (plus 25c Postage)..... **\$10.00**

OVER 1,000,000 SOLD!

What a record this is! Up to the time production was stopped a couple of years ago, more than a million Pacific Ace kits had been manufactured and sold. Now she's back again! Same swell kit with all parts needed. All-balsa, with full size plans. Fly the Pacific Ace and you're flying a time-tested, proven winner! (Plus 15c Postage)..... **\$5.00**

MISS TINY

First choice of West Coast free flight fans. But if you shorten each wing 4" Miss Tiny becomes the sweetest control-line trainer you ever saw. Power: 29-45 cu. in. All balsa standard kit..... **\$3.65** (Plus 25c Postage)





See Gee and Miss Tiny, 15-cased under Jim Walker's U-Control Patent No. 2292410.

ALL-BALSA GREMLIN OR KAYDET

Gremlin glider—Kaydet rubber-power flyer. All balsa kits. Build either one in 20-30 minutes. Complete with plans, each..... **25c** (plus 10c postage)

"BUTCH"

Budget, dependable. A swell flyer that can take a lot of wallop. 28" wingspan. Complete kit..... **\$3.65** (Plus 25c Postage)



PELICAN

A 5 ft. giant made to stand up and take it! A sweet towline glider. Complete kit..... **\$1.25** (Plus 15c postage)

Modelcraft

"Flying Models That Really Fly"
11929 South Western Ave. Los Angeles 44, Calif.

RANGER PRESENTS THE



Lancer

A new, easy-to-assemble Prefabricated Kit for Class A or B Control Models...featuring the Unique "Slide-Controller"*

SPECIFICATIONS

Wing Span.....22½"
Fuselage length (overall) 18"
Weight.....12 ounces with engine shown
Takes any Class "A" or "B" Engine

FEATURES

Fuselage is shaped and hollowed
Unique Slide Controller*
Tail assembly cut to shape.
2" rubber wheels
Hardware accessories
Sheet covered wings
Easily followed graphic plans

Designed for speed and stunt flying...for beginners or well established model airplane builders. Ranger, has developed a unique Slide Controller*...small, light, compact...that puts the plane through its paces as if a pilot were at the controls. Every part of the model is accurately shaped and finished...ready for easy final assembly on a private assembly line. See the Lancer at your dealer.

\$5.95

At your local dealer



RANGER AIRCRAFT MODELS
1963 86TH STREET • BROOKLYN, N. Y.

Available only in Ranger Models...this small, light compact Slide Controller*



*Patent Pending

anxious to exchange ideas with other clubs. Mrs. Hay's address is 2336 S.W. 31st St., Oklahoma City.

Washington

The Tacoma Aeromudlers report the election of new officers for the Jan. 1-June 30 term as follows: Pres., Jerry Thomas; Vice Pres., Fred Doty; Sec., Frank "Curly" Hansen; Treas., Vic Lichenberg.

"Curly" Hansen reports the results of the monthly club contest which was held at Harts Lake Prairie on December 29:

1. Don Sangsund. 2. Bob Ormsby. 3. Byron Blanchfield.

Wisconsin

Wally Strittmater, 1530 Jackson St., LaCrosse, requests that all Wisconsin model builders send their names and addresses to him so that he may send them full information on the new state association. The first major objective of this association is the forthcoming National Elimination Meet for the Wisconsin area.

England

Roy Gunn, of West Coventry M.A.C. reports through ABA News that the popularity of their indoor season is evidenced by the large number of members attending and the number of models being flown. A competition was held last October 23 and the winner was A. J. Barr, with aggregate times of 279.3 secs.; Mr. Dudley, of the Kenilworth Branch, was runner-up with an aggregate of 129.8 secs.

Palestine

The Editor of MODEL AIRPLANE NEWS received an invitation to a Sailplane and Model Airplane Exhibition sponsored by The Jewish Aero Circle at the Dov-Hoze House, 22 Bezalel St., Tel Aviv, on December 22, 1946.

South Africa

Lieut. W. R. Kotze, 84 Smit St., Silverton, Pretoria, Transvaal, South Africa, writes that there are a good many clubs in the Union which usually hold contests once a month with a meet every Sunday. Arrangements are being made to hold their first Nationals since 1938 sometime during April, with Bill rooting for the Carwill team.

R. D. Masters, 44 Oakhill Road, Berea, East London, South Africa, a former B24 pilot, writes as Chairman of the East London Model Aeroplane Club that sailplanes are extremely popular with them, having produced their best flights. One Thermic "70" turned in 39 min. 25 sec. at one meet, and 15 min. at the next. Gas models are plentiful; rubber models have not been spectacular due to the shortage of good rubber.

Finish First

(Continued from page 21)

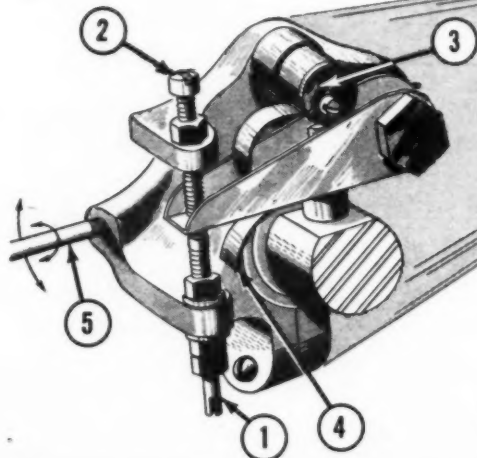
owes its beautiful finish to 25 to 30 coats of various types of dope, with 8 to 12 separate sanding operations. Even the Cub, where lightness and economy of production rather than beauty are of first importance, probably has a 9 coat finish. So don't try to shortcut the finish of your scale model.

It is not possible to state the number of coats of dope any particular fabric covered scale model will require; this depends on the material used in covering, the care used in the doping, and the pigmented dope used for the final color. It is fairly certain that 8 to 14 coats of

(Turn to page 71)

NEW CANNON "STRATO" TIMER

- ✓ STARTS ENGINE QUICKER
- ✓ ELIMINATES FLUTTER AT HIGH SPEEDS
- ✓ TESTED TO 18,000 RPM'S WITH FLYWHEEL



PATENT PENDING

No other timer combines all of its advantages. It is particularly valued by those who appreciate the fine adjustments that make peak performance possible, yet simple enough for a beginner to set without trouble.

Interchangeable on all Cannon Engines

- 1 Screw for setting proper breaker point clearance.
- 2 & 3 Eliminates flutter at high speeds.
 - (2) Positive adjustable stop to limit the upward travel of breaker arm.
 - (3) Adjustable cam assures proper spring tension at all times.
- 4 Oil Guard; breaker points kept dry and free of oil.
- 5 Positive locking spark advance lever.
- 6 Parts accessible for quick adjustment and cleaning.

CANNON MANUFACTURING COMPANY • 1878 EAST 18th STREET CLEVELAND 14, OHIO



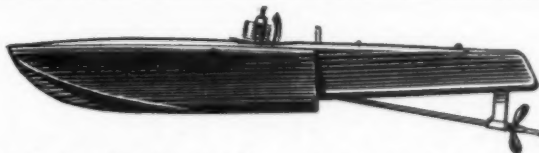
21 for 21

Western Dealers
Get
**QUALITY
MERCHANDISE
AND
DEPENDABLE
SERVICE**

— WHOLESALE ONLY —

WESTERN MODEL
Distributors

1576 W. Adams Blvd. 1106 Fifth Avenue
Los Angeles 7, Calif. Oakland 6, Calif.



MISS AMERICA 26 1/2 Inch Speed Boat Hull

Made to fit all 1/5 H.P. Aero Engines. Complete kit includes: all frames cut to fit, planking for deck, sides and bottom, motor mounts, metal fittings, complete plans and instructions.

\$3.95
Without Fittings

\$5.95
Complete

\$2.50
Fittings Only

RUNABOUT PCI

A durable plastic, rubber-band-powered motor boat. It is in an attractive mahogany color, and is modeled to scale. A very practical top that can be bought in kit form, or completely assembled.



Kit Form
\$1.19

Assembled
\$1.29

You'll find these and many other attractive items in the Searle-Crafts line. Buy them from your dealer.

Searle-Crafts

1590 So. Miss. River Blvd.
ST. PAUL 5, MINN.

Searle-Crafts products are sold only through recognized jobbers. Dealers write us for name of jobber in your locality.

Airco Presents

AIRCO "V" LANDING GEAR

"V" design best for maximum shock absorption. Low cost. Much trouble saved.

1/4 Wire	3/32 Wire
1" Price 25c	1" Price 25c
2" Price 35c	2" Price 35c
3" Price 45c	3" Price 45c
4" Price 55c	4" Price 55c

AIRCO SPECIAL MACH. CUT PROPS

Cut especially for us. Extra thick hubs for strength and airfoil shaping. F/D Ratio 1.3 provides large blade area. Shaft hole drilled.

PRICE
10" 12c
12" 14c
14" 16c
16" 18c
18" 20c
20" 22c
22" 24c
24" 26c

MAECO STOOGIE

Your silent partner. Holds model in place. Gives you a chance to use both hands. 50c

MAECO TANK

For Aerobatics. Inverted flying. High speed. Uses fuel to last drop. \$1.00

T-55 BROWN RUBBER

Identical to pro-war. Made by U.S. Rubber Co. At prices you can afford. Small sizes promised late in Feb.

1 1/2	1 3/4	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8	8 1/2	9	9 1/2	10	10 1/2	11	11 1/2	12	12 1/2	13	13 1/2	14	14 1/2	15	15 1/2	16	16 1/2	17	17 1/2	18	18 1/2	19	19 1/2	20	20 1/2	21	21 1/2	22	22 1/2	23	23 1/2	24	24 1/2	25	25 1/2	26	26 1/2	27	27 1/2	28	28 1/2	29	29 1/2	30	30 1/2	31	31 1/2	32	32 1/2	33	33 1/2	34	34 1/2	35	35 1/2	36	36 1/2	37	37 1/2	38	38 1/2	39	39 1/2	40	40 1/2	41	41 1/2	42	42 1/2	43	43 1/2	44	44 1/2	45	45 1/2	46	46 1/2	47	47 1/2	48	48 1/2	49	49 1/2	50	50 1/2	51	51 1/2	52	52 1/2	53	53 1/2	54	54 1/2	55	55 1/2	56	56 1/2	57	57 1/2	58	58 1/2	59	59 1/2	60	60 1/2	61	61 1/2	62	62 1/2	63	63 1/2	64	64 1/2	65	65 1/2	66	66 1/2	67	67 1/2	68	68 1/2	69	69 1/2	70	70 1/2	71	71 1/2	72	72 1/2	73	73 1/2	74	74 1/2	75	75 1/2	76	76 1/2	77	77 1/2	78	78 1/2	79	79 1/2	80	80 1/2	81	81 1/2	82	82 1/2	83	83 1/2	84	84 1/2	85	85 1/2	86	86 1/2	87	87 1/2	88	88 1/2	89	89 1/2	90	90 1/2	91	91 1/2	92	92 1/2	93	93 1/2	94	94 1/2	95	95 1/2	96	96 1/2	97	97 1/2	98	98 1/2	99	99 1/2	100	100 1/2	101	101 1/2	102	102 1/2	103	103 1/2	104	104 1/2	105	105 1/2	106	106 1/2	107	107 1/2	108	108 1/2	109	109 1/2	110	110 1/2	111	111 1/2	112	112 1/2	113	113 1/2	114	114 1/2	115	115 1/2	116	116 1/2	117	117 1/2	118	118 1/2	119	119 1/2	120	120 1/2	121	121 1/2	122	122 1/2	123	123 1/2	124	124 1/2	125	125 1/2	126	126 1/2	127	127 1/2	128	128 1/2	129	129 1/2	130	130 1/2	131	131 1/2	132	132 1/2	133	133 1/2	134	134 1/2	135	135 1/2	136	136 1/2	137	137 1/2	138	138 1/2	139	139 1/2	140	140 1/2	141	141 1/2	142	142 1/2	143	143 1/2	144	144 1/2	145	145 1/2	146	146 1/2	147	147 1/2	148	148 1/2	149	149 1/2	150	150 1/2	151	151 1/2	152	152 1/2	153	153 1/2	154	154 1/2	155	155 1/2	156	156 1/2	157	157 1/2	158	158 1/2	159	159 1/2	160	160 1/2	161	161 1/2	162	162 1/2	163	163 1/2	164	164 1/2	165	165 1/2	166	166 1/2	167	167 1/2	168	168 1/2	169	169 1/2	170	170 1/2	171	171 1/2	172	172 1/2	173	173 1/2	174	174 1/2	175	175 1/2	176	176 1/2	177	177 1/2	178	178 1/2	179	179 1/2	180	180 1/2	181	181 1/2	182	182 1/2	183	183 1/2	184	184 1/2	185	185 1/2	186	186 1/2	187	187 1/2	188	188 1/2	189	189 1/2	190	190 1/2	191	191 1/2	192	192 1/2	193	193 1/2	194	194 1/2	195	195 1/2	196	196 1/2	197	197 1/2	198	198 1/2	199	199 1/2	200	200 1/2	201	201 1/2	202	202 1/2	203	203 1/2	204	204 1/2	205	205 1/2	206	206 1/2	207	207 1/2	208	208 1/2	209	209 1/2	210	210 1/2	211	211 1/2	212	212 1/2	213	213 1/2	214	214 1/2	215	215 1/2	216	216 1/2	217	217 1/2	218	218 1/2	219	219 1/2	220	220 1/2	221	221 1/2	222	222 1/2	223	223 1/2	224	224 1/2	225	225 1/2	226	226 1/2	227	227 1/2	228	228 1/2	229	229 1/2	230	230 1/2	231	231 1/2	232	232 1/2	233	233 1/2	234	234 1/2	235	235 1/2	236	236 1/2	237	237 1/2	238	238 1/2	239	239 1/2	240	240 1/2	241	241 1/2	242	242 1/2	243	243 1/2	244	244 1/2	245	245 1/2	246	246 1/2	247	247 1/2	248	248 1/2	249	249 1/2	250	250 1/2	251	251 1/2	252	252 1/2	253	253 1/2	254	254 1/2	255	255 1/2	256	256 1/2	257	257 1/2	258	258 1/2	259	259 1/2	260	260 1/2	261	261 1/2	262	262 1/2	263	263 1/2	264	264 1/2	265	265 1/2	266	266 1/2	267	267 1/2	268	268 1/2	269	269 1/2	270	270 1/2	271	271 1/2	272	272 1/2	273	273 1/2	274	274 1/2	275	275 1/2	276	276 1/2	277	277 1/2	278	278 1/2	279	279 1/2	280	280 1/2	281	281 1/2	282	282 1/2	283	283 1/2	284	284 1/2	285	285 1/2	286	286 1/2	287	287 1/2	288	288 1/2	289	289 1/2	290	290 1/2	291	291 1/2	292	292 1/2	293	293 1/2	294	294 1/2	295	295 1/2	296	296 1/2	297	297 1/2	298	298 1/2	299	299 1/2	300	300 1/2	301	301 1/2	302	302 1/2	303	303 1/2	304	304 1/2	305	305 1/2	306	306 1/2	307	307 1/2	308	308 1/2	309	309 1/2	310	310 1/2	311	311 1/2	312	312 1/2	313	313 1/2	314	314 1/2	315	315 1/2	316	316 1/2	317	317 1/2	318	318 1/2	319	319 1/2	320	320 1/2	321	321 1/2	322	322 1/2	323	323 1/2	324	324 1/2	325	325 1/2	326	326 1/2	327	327 1/2	328	328 1/2	329	329 1/2	330	330 1/2	331	331 1/2	332	332 1/2	333	333 1/2	334	334 1/2	335	335 1/2	336	336 1/2	337	337 1/2	338	338 1/2	339	339 1/2	340	340 1/2	341	341 1/2	342	342 1/2	343	343 1/2	344	344 1/2	345	345 1/2	346	346 1/2	347	347 1/2	348	348 1/2	349	349 1/2	350	350 1/2	351	351 1/2	352	352 1/2	353	353 1/2	354	354 1/2	355	355 1/2	356	356 1/2	357	357 1/2	358	358 1/2	359	359 1/2	360	360 1/2	361	361 1/2	362	362 1/2	363	363 1/2	364	364 1/2	365	365 1/2	366	366 1/2	367	367 1/2	368	368 1/2	369	369 1/2	370	370 1/2	371	371 1/2	372	372 1/2	373	373 1/2	374	374 1/2	375	375 1/2	376	376 1/2	377	377 1/2	378	378 1/2	379	379 1/2	380	380 1/2	381	381 1/2	382	382 1/2	383	383 1/2	384	384 1/2	385	385 1/2	386	386 1/2	387	387 1/2	388	388 1/2	389	389 1/2	390	390 1/2	391	391 1/2	392	392 1/2	393	393 1/2	394	394 1/2	395	395 1/2	396	396 1/2	397	397 1/2	398	398 1/2	399	399 1/2	400	400 1/2	401	401 1/2	402	402 1/2	403	403 1/2	404	404 1/2	405	405 1/2	406	406 1/2	407	407 1/2	408	408 1/2	409	409 1/2	410	410 1/2	411	411 1/2	412	412 1/2	413	413 1/2	414	414 1/2	415	415 1/2	416	416 1/2	417	417 1/2	418	418 1/2	419	419 1/2	420	420 1/2	421	421 1/2	422	422 1/2	423	423 1/2	424	424 1/2	425	425 1/2	426	426 1/2	427	427 1/2	428	428 1/2	429	429 1/2	430	430 1/2	431	431 1/2	432	432 1/2	433	433 1/2	434	434 1/2	435	435 1/2	436	436 1/2	437	437 1/2	438	438 1/2	439	439 1/2	440	440 1/2	441	441 1/2	442	442 1/2	443	443 1/2	444	444 1/2	445	445 1/2	446	446 1/2	447	447 1/2	448	448 1/2	449	449 1/2	450	450 1/2	451	451 1/2	452	452 1/2	453	453 1/2	454	454 1/2	455	455 1/2	456	456 1/2	457	457 1/2	458	458 1/2	459	459 1/2	460	460 1/2	461	461 1/2	462	462 1/2	463	463 1/2	464	464 1/2	465	465 1/2	466	466 1/2	467	467 1/2	468	468 1/2	469	469 1/2	470	470 1/2	471	471 1/2	472	472 1/2	473	473 1/2	474	474 1/2	475	475 1/2	476	476 1/2	477	477 1/2	478	478 1/2	479	479 1/2	480	480 1/2	481	481 1/2	482	482 1/2	483	483 1/2	484	484 1/2	485	485 1/2	486	486 1/2	487	487 1/2	488	488 1/2	489	489 1/2	490	490 1/2	491	491 1/2	492	492 1/2	493	493 1/2	494	494 1/2	495	495 1/2	496	496 1/2	497	497 1/2	498	498 1/2	499	499 1/2	500	500 1/2	501	501 1/2	502	502 1/2	503	503 1/2	504	504 1/2	505	505 1/2	506	506 1/2	507	507 1/2	508	508 1/2	509	509 1/2	510	510 1/2	511	511 1/2	512	512 1/2	513	513 1/2	514	514 1/2	515	515 1/2	516	516 1/2	517	517 1/2	518	518 1/2	519	519 1/2	520	520 1/2	521	521 1/2	522	522 1/2	523	523 1/2	524	524 1/2	525	525 1/2	526	526 1/2	527	527 1/2	528	528 1/2	529	529 1/2	530	530 1/2	531	531 1/2	532	532 1/2</
-------	-------	---	-------	---	-------	---	-------	---	-------	---	-------	---	-------	---	-------	---	-------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	----	--------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	---------	-----	-----------

dope are necessary to obtain maximum lustre of finish on silk. It is this fact that model fans should bear in mind from the first, for the greatest strain that will be imposed arises from shrinkage of the covering. One unfortunate aspect of this situation is that the very parts which, on full sized aircraft, are stressed to carry only incidental loads, must on the model be under the greatest strain.

The trailing edge of the wings and the fairing strips along the fuselage, for example, are points on the model where maximum strain occurs. These are parts of relatively small dimension. On the average scale model, to hold these parts to scale and at the same time insure adequate strength to carry the strain imposed by 8 to 14 coats of dope, requires special consideration. It cannot be overemphasized that this type of problem must be worked out while the model is at an early stage of construction if a finish worthy of the detailed scale model is to be achieved. The model builder should be certain the materials chosen and the type of construction followed will provide a structure sturdy enough to stand the strain imposed in the finishing process. As a suggestion, metal can frequently be used in those parts subjected to the greatest strain. Thin sheet aluminum, copper or brass can usually be worked without special tools or equipment.

If the scale model is built in the same manner as its full-sized prototype—in various units which can be assembled and disassembled—the following advantages will be realized:

1. Each unit (wing panel, fuselage assembly, etc.) can be finished separately.
2. Maintenance of the model's finish is far easier since disassembly permits cleaning or repairing of parts as necessary.
3. Greater fidelity is achieved in duplicating the full-sized structure.

Each of the models illustrated can be disassembled completely in a few minutes, and the advantages gained from this have proven well worth the additional construction time spent in making this possible.

One procedure of fabric work in the aircraft industry that can be adapted to scale model work is the use of pinked tape. On all fabric covered aircraft structures pinked cotton tape in appropriate widths is attached before covering to all edges of the structure against which the fabric would touch. This tape is attached to all ribs, fairing strips, leading and trailing edges, and longerons. The purpose is to strengthen and protect the covering at these edges where strain and wear are greatest. After covering and applying the first coats of dope, a second layer of this tape is doped on over the same edges, thus providing three layers of fabric at the points of greatest strain on the covering. (This is exclusive of the special tape used in the process of sewing the wing cover to the ribs. Since model covering need not be sewn there is no comparable use of this type in scale model work.)

A modification of this technique can advantageously be used on scale models. Silkspan paper cut in strips can be used to duplicate the pinked tape. All model fans who have used silk as a covering material are familiar with its tendency, when doped, to wrap itself around fairing strips and other portions of the model's structure with which it comes in contact. This occurs because model airplane silk is extremely porous and the dope tends to penetrate through to the structure. A Silkspan strip under the silk covering

(Turn to page 73)



Modern POWER

DIESEL

DRONE

GOLD B CROWN

AMERICA'S FIRST — AMERICA'S FINEST!
The Drone Diesel is THE modern power plant. Modern Diesel design at peak of perfection and operating simplicity. Drone-sleek, streamlined, compact — is a painless of power, ready-to-fly within seconds after removal from its carton. Flies within seconds because you can forget spark plug, coil, batteries, condenser and complicated cross wiring — **DRONE DIESEL IS ENTIRELY IGNITIONLESS!** **FREE FLIGHT ATTACHMENT** — **PATENTED** principle of operating allows complete engine speed control ready to install. Patented principle of operating allows complete engine speed control and instantaneous shut-off. The only Diesel in the world to feature this principle. **DRONE SHOWS THE WAY!** See one operate today! — is featured by modern hobby dealers everywhere.

DRONE "Gold Crown" Specifications

Class B	Displ. .297 cu. in.
Bore 21/32	Stroke 18/1
Compression Ratio	Prop. 6"-18"
Weight 9 1/2 oz.	
RPM Averages 2000-12000	

DRONE is Leon Shulman's masterful development—an outstanding achievement by one of America's outstanding flying aviator modellers.

DRONE DIESEL BOOKLET — FREE
Illustrated booklet yours free — at dealers everywhere or from factory for stamped, addressed envelope.
Buy your **DRONE DIESEL** today at your Hobby Shop. If no Drone Dealer near you, write to:



COMPLETE — NOTHING ELSE TO BUY \$21.50

DRONE ENGINEERING, Inc., 125 Broad St., Elizabeth, N. J.

6783 ITEMS

FOR THE MODEL, HOBBY
AND CRAFTS DEALER

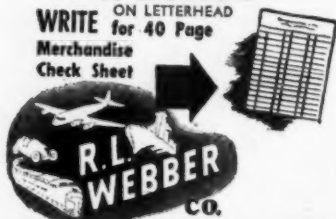
★ PLANES

★ TRAINS

★ BOATS

WRITE ON LETTERHEAD
for 40 Page

Merchandise
Check Sheet



5729-31 W. Lake Street, Chicago 44
Wholesale Only

Modelers
in New England...
FREE LIST

WRITE TODAY

EVERYTHING
IN HOBBIES
AND SUPPLIES

MODEL
AIRPLANES
BOATS-MOTORS
BALSA-SUPPLIES

THE
Airplane SHOP

25 HIGH ST., PAWTUCKET, R. I.

Thank You
MR. DEALER!

Your recognition of Sky Hobby's
policy of:

- Acknowledging all orders promptly
- Making immediate shipment from our central location
- Quoting maximum discounts—
- Prompts us to say Thank You!

Your acceptance of this policy
has been responsible for our rapid
growth. May we continue to serve
you?

SKY HOBBY
INCORPORATED

806 GRAND AVE. KANSAS CITY 6, MO.
NOTHING SOLD AT RETAIL

"Rite-Pitch"

The World's Finest Gas Model Propellers
ARE BACK...



AND YOU
CAN GET THEM!!

8" & 9" 40c List
10" & 11" 50c List
12"-13" & 14" 60c List

Made in 6"-8"-10" & 12" Pitch for Controline or
Free Flight.

JOBBERs contact us immediately for "Rite-Pitch"
... The World's Finest Gas Model Propellers.

Bob Roberts



110 W. 7th Ave.
Gary, Indiana

24-hr. Service!

GAS MODELS (CONTROL)		Cleveland Playboy Jr.	
Ameco—Miss Behave		"A" and "B"	2.50
Streamliner	4.95	Cleveland Playboy	
Ameco—Baby Behave	2.95	Sr. "C"	4.50
Ameco—Miss Behave	3.05	Comet Zipper "A"	1.95
Ameco—Short		"B" and "C"	5.05
Snorter	2.95	Comet Sailplane	8.95
Ameco—Scat	7.50	Eagle Wanderer	3.50
Capitol—Ercoupe	7.50	"B"	5.50
Capitol—Skycycle	7.50	Vagabond	3.95
Capitol—Beechcraft	9.95	Eagle Spearhead Sr.	3.95
Comet Deluxe	9.95	Eagle Skybo	6.95
Whizzer	9.95	MOTORS	
D'Meco Special	7.95	Rocket "C"	22.50
D'Meco Biplane	3.95	Arden .099 (plain)	16.50
Falcon Kaydet	5.45	Arden .099	
Mardix Challenger	9.50	(ball-bearing)	19.50
Baby V Shark	2.95	Arden .199	
Stanzel Super V	4.95	(ball-bearing)	21.50
Stanzel Tiger Shark	4.95	Bantam	18.50
Strato Cat	5.95	McCoy	35.00
		Denny Mite	15.55
GAS MODELS (FREE FLIGHT)		CHAMPION	
Capitol Piper Cub		SPARK PLUGS	
"A"	1.95	POWER MIST FUEL	
Coast Crusader "A"	1.95	Quart	\$1.10
Cleveland Baby	1.00		
Playboy "A"			

(No C.O.D. Orders)

PHILLIPS MODEL SHOP
114 W. 7TH ST. CHATTANOOGA, TENN.

\$ \$ For Your Ideas

\$ \$ for the writing of
a few letters

American manufacturers are
looking for gadgets, ideas and in-
ventions. If 5,000 people in
America can use or benefit from
your idea you can sell it in less
than sixty days. Let me show
you how I've sold my unpatented
inventions. Send for more in-
formation—no obligation. George
Pearce, 47X Bartholomew St.,
Peabody, Mass.

"Model Airplane News" BOUND VOLUMES

A FEW bound volumes containing July to December 1946 issues of MODEL AIR-
PLANE NEWS are available at \$6 each. Orders will be filled as long as the supply lasts.

Send remittance to: Dept. BV, Model Airplane News, 551—5th Ave., New York 17

Tiger
MODEL
ENGINE FUEL
Pyroil Treated

Especially prepared for use in model
engines. A highly
efficient source of
dependable and
consistent power.
Pyroil treated
for longer en-
gine life.

Quarts
60
Pints
35

Tiger HOBBY
PRODUCTS CO. CRAFT
CHICAGO 4, ILL. SUPPLIES

ARE YOU A MODEL BUILDER?

Do you order by Mail for the
tops in fast, dependable accu-
rate service on all motors, kits
and supplies?

All Kansas orders must include 2% extra for
Kansas Sales Tax.

Orders of Ten Dollars prepaid; under that
include 10% extra for postage.

Full line free flight kits.

Full line U-Control models.

All standard makes motors.

Full lines of accessories.

Plenty of balsa wood.

Prompt Service Every Time
Try Us!

LELAND'S MODEL SERVICE

Box 17

ALMA, KANSAS

200 HOUR MOTOR
Merlin
SUPER "B"

\$18
U.S.A.

Complete
with coil,
sparkplug, con-
denser and gas tank.

MERLIN MINIATURES, INC.
426-6 Ave. Bklyn 15, N.Y. (MA-4)
In Can.—716 Bathurst St., Tor. 4, Ont.

effectively stops this tendency. A second advantage occurs when sanding a covered surface. In this operation even the finest sandpaper may cut through the covering at exposed places—over a rib or fairing strip for example. With three layers of covering over these places (a strip of Silkspan, the silk covering, and a second strip of Silkspan) the danger of sanding through the covering is reduced. It is believed that this procedure greatly facilitates the covering and finishing processes.

Although the success in covering scale models depends on the individual's skill and experience in working with silk, it also depends on consideration of the following general rules:

1. The "grain" of the covering material should parallel the longer dimension of the part being covered. (The grain of silk parallels the selvage.)

2. The covering of parts where the curvature is in two directions is best accomplished working with wet silk. (Difficulty is frequently encountered in aircraft fabric work in obtaining this type of fabric curvature. Examples that come to mind are the junction of fin and fuselage on recent model Stinsons and the fabric fillet between centersection and fuselage on certain model Beechcraft biplanes.) Repeated attempts will eventually yield the effect desired in this type of model fabric work.

3. Thick dope or model cement is suitable for adhesive. The covering should be cemented to the structure at intermediary points only where necessary. That is, only where the curve of the structure is concave.

4. Uniform tension of covering on all areas should be obtained in order to equalize the strain on the structure and the tautness of the final surface.

The covering of each unit should be sprayed with water before doping—an atomizer or insect spray gun is suggested. If the covering has been done properly no wrinkles or malformations will remain after shrinkage takes place. If wrinkles remain it is not a safe policy to trust that they will disappear with the application of dope.

There are many advantages to spraying dope rather than brushing it. It is possible, however, to obtain as excellent a final finish by using a brush as with a spray gun; it just takes longer. Sable-hair brushes will be found very satisfactory for models up to about 4 ft. in span.

The doping procedure recommended is similar to that followed in the aircraft industry. Apply one coat of clear dope to all surfaces of the model; then dope the strips of Silkspan over the structure as previously suggested, following with 2 coats of clear dope. The surfaces on the various parts at this point should be taut enough for sanding. This initial sanding can be done with No. 320 Wetordry sandpaper used wet. Sand lightly and avoid as much as possible sanding on top of ribs and similar places. After sanding a wing panel, for example, look along the surface into a strong light. A multitude of small bright spots will probably be noted at this early stage. These are miniature pits in the finish which it is necessary to fill; eventually they can all be removed from the finish.

Follow the initial sanding with 2 more coats of clear dope. Unless the finish is unusually rough it is suggested that sanding be done with No. 400 Wetordry paper from this stage. Not more than 2 coats of dope should be applied without sanding. It is recommended that aluminum dope be used after these 5 coats of clear dope. Aluminum dope makes an excel-

Skyway's Plane Talk

7 day delivery
24 HOUR SERVICE GUARANTEED

BALSA SHEETS—2x18

Base or Pine Coat 1 1/2" x 18" Balsa			
2 x 36 or 3 x 18 coat 2 times	1/16	3 for 10c	3 for 10c
2 x 36 or 3 x 18 coat 3 times	1/8	3 for 10c	3 for 10c
2 x 36 or 3 x 18 coat 4 times	1/4	3 for 10c	3 for 10c
2 x 36 or 3 x 18 coat 5 times	1/2	3 for 10c	3 for 10c
2 x 36 or 3 x 18 coat 6 times	3/4	3 for 10c	3 for 10c
2 x 36 or 3 x 18 coat 7 times	1	3 for 10c	3 for 10c
2 x 36 or 3 x 18 coat 8 times	1 1/4	3 for 10c	3 for 10c
2 x 36 or 3 x 18 coat 9 times	1 1/2	3 for 10c	3 for 10c
2 x 36 or 3 x 18 coat 10 times	1 3/4	3 for 10c	3 for 10c
2 x 36 or 3 x 18 coat 11 times	1 7/8	3 for 10c	3 for 10c
2 x 36 or 3 x 18 coat 12 times	2	3 for 10c	3 for 10c

18" BALSA STRIPS

36" coats double. Sines with * come in 60" too. Cost 5 times 18". Minimum order on 60"—\$1.00.			
1/16 sq.....	20. 5c	3/16x4.....	3. 1c
1/8x1.....	10. 5c	3/16x1.....	3. 1c
1/16x3 18 7. 5c		3/16x4.....	4c
1/16x4.....	6. 5c	3/16x1.....	4c
1/16x4.....	6. 5c	1/4x1.....	3. 1c
1/16x4.....	3. 5c	1/4x4.....	2c
3/32 sq.....	10. 5c	1/4x1.....	3. 1c
3/32x3 18 7. 5c		1/4x4.....	3c



IT'S NEW!

FROM MONOPLANE TO BIPLANE IN THREE MINUTES!

The New DOODLE BUG "Convertible" \$5.45
This U-Control combination, engineered by world famous Frank Greene for class B or small C motors. Top quality materials, 28" wing span, easy-to-follow blueprints.

DOODLE BUG Super Motor Kit \$24.95
COMPLETE—No Extras Needed. With a K & B class B torpedo engine, coil, condenser, gas tank, wheels and propeller.

At Your Dealers NOW or write to:



Eastern Branch Office
Hotel Breslin
1192 Broadway
New York City

* licensed under Jim Walker's U-Control patent number 2292416

BUILD A HOBBY MODEL

**"KIT-HIT" ✓ CHECK CONTENTS
✓ CHECK WINGSPREAD**

42 INCH WINGSPAN—FLIGHT TESTED!



\$1.25

TWICE THE CONTENT—AT HALF THE PRICE!

OTHER \$1.25 "KIT HITS"

D-56 LE MAR SKYFARER G1-80
42" W/S—Convertible Gas & Rubber

D-58 CLOUD CHASER
60" W/S—Tow Line Glider
D-29 NORTH-AMERICAN
P-51 "APACHE"

36" W/S—Flying Scale Model
D-30 WACO CG-4A
62" W/S—Flying Scale Tow
Line Glider

D-31 MARTIN B-26
18" W/S—Hollow Scale
Model

KIT No. D-57

CURTIS SEAHAWK-SCI

FLYING SCALE MODEL FOR SEA AND LAND

42 INCH WINGSPAN—EQUIPPED WITH PONTOONS
FOR LANDING ON SEA AND REGULATION WHEEL
LANDING GEAR FOR LANDING ON LAND—FOLDING
COCKPIT COVER—FULL LENGTH STRIPS—FLIGHT TESTED.

CONTENTS OF KIT: 10 printed balsa wood sheets for fuselage, wing and pontoon construction—50 balsa wood longerons—2 finished wheels—genuine "SILKSPAN" tissue—Dowel—Balsa wood block for prop hub—Cement—Dope—Length of piano wire for landing gear, etc.—Cellophane for cockpit cover—Full size 30 x 40" plan containing interesting story of plane, building drawings, schematic references, control hookup, simplified and complete A-B-C building notes, flying instructions, etc.

See your dealer! If he cannot supply you, order direct and include 20c additional for postage and packing. Also send name of your local dealer.

Dealers! Please Write for catalog and complete Hobby line of 10c, 25c, 50c, \$1.25 kits.
HOBBY MODEL MFG. CO. INC. • 149 W. 24th ST. • NEW YORK 11, N. Y.

lent base for any pigmented dope; it is a fine protection for the silk covering and the aluminum powder has a tendency to fill the miniature crevices in the finish.

If "blushing" occurs, a fine spray of thinner will usually remove it. "Blushing" is due to the moisture content of the air, and it is suggested that at least the final coats of pigmented dope be applied in quite dry weather. The weather may also affect the alignment of surfaces—particularly, alignment of the trailing edges of wing panels or tail surfaces in fabric covered structures. A surface held by a jig in proper alignment while the shrinkage of the cover takes place will often warp out of alignment long after the model is completed if subjected to rapidly changing temperature and humidity. For this reason jigs should not be utilized in this stage of scale model construction.

After 7 to 9 coats of dope have been applied to the surface with appropriate sanding (5 coats clear dope, 2 to 4 aluminum dope), the surface held up to a strong light should reflect all light rays uniformly. It should be impossible to determine the silver grey color by looking along the surface into such a light—the finish should appear to have what can only be described as a "liquid quality." Whenever this condition is met the model is ready for its final pigmented dope. If more than one color pigment is to be used on one part, a wing panel for example, masking tape is indispensable. It is suggested that the desired finish of one color be obtained before proceeding to the other color, and that the predominating color be applied first. With the possible exception of very light colors, 2 to 4 coats of pigmented dope will be sufficient.

For the final sanding No. 600 Wetordry paper is preferred although No. 400 can be used if sanding is done very lightly. It will be noted that all sanding dulls the finish, but the brilliance and lustre that only a smooth surface can have is easily restored by use of paste wax, fine rubbing compound, or if the surface is very smooth, by simply rubbing with a soft cloth. It is extremely important never to use rubbing compound or wax on any surface until all doping is completed.

This method of obtaining a fine finish on fabric covered scale models may seem unnecessarily long. Actually, however, it represents only a small percentage of the total time spent on a detailed scale model.

World War I

(Continued from page 38)

provided in previous designs by staggering wings or cutting away portions of the wings in the vicinity of the cockpit. British designers had for years been trying to improve the pilot's outlook and almost succeeded in 1916 with the back-staggered De Havilland 5 biplane. But the De H-5's bulging rotary engine plus its premature obsolescence failed to solve the problem. The ultimate sought was visibility comparable to that provided by such early pusher fighters as the F.E. 8 or De H-2 in which the pilot sat out in front of a central nacelle with all the land and sky before him unobstructed.

Design thinking on the Dolphin began as a scratch pad doodle in the engineering rooms of the Sopwith Aviation Company Ltd. during the summer of 1916. The doodling engineers pointed with pride at their thumbnail sketches of what might be if only a 190 hp water cooled engine were available to fill the bill. The only likely engine, built by Rolls Royce, had already been earmarked for other more

urgent types such as the Bristol Fighter.

Then, like a bolt from the blue, word came that Wolseley Motors had obtained a license from Hispano Suiza to manufacture their new 200 hp geared engine. With promise of an appropriate powerplant, the doodle soon became a purely engineering project and the forces of Sopwith immediately went to work on model 5F.1. It was nicknamed "Dolphin" in accordance with the Sopwith custom of naming their products after animals, fish or fowl.

The prospect of working up a design incorporating a water cooled engine probably appealed greatly to Sopwith's engineering staff. So far they had worked only on rotary engined planes for front line service. The new project, 5F.1, with its back-staggered wings offered new opportunity for great play of the imagination, a challenge to put everything into a single seat fighter that should be there.

Design and construction work progressed rapidly and on May 23, 1917 the Sopwith experimental department put its seal of approval on the 5F.1 Dolphin and turned the prototype over to stress and flight test.

Dolphin Prototype

In its original state, the Dolphin differed in a number of details from subsequent production models. The prototype and first few service test examples were characterized by a high and narrow nose radiator with the propeller shaft projecting through an appropriate hole in the upper half and a typically Sopwith vertical tail surface somewhat similar to that of the famous Camel. The engine, a revolutionary feature for a Sopwith airplane, was a water cooled Hispano Suiza type 8-B, geared 4 to 3 and rated a maximum of 206 hp at 2,000 rpm.

Generally, the configuration of the initial production Dolphin was little different from the prototype. Within limits of engineering changes they were the same dimensionally. But by late summer 1917, Dolphins which had been put on service test status demonstrated that while the design was inherently good, there was much to be desired by way of improvement before the airplane could be considered fit for front line service. Some trouble had been experienced at the factory in obtaining satisfactory radiators in quantity from an already overtaxed cooling system industry. The Dolphin exhibited, in addition, a tendency to spin violently under certain conditions, and it was found difficult to effect spin recovery. In addition, and somewhat more alarming, was the structural failure of Dolphin wings in several instances, some of which were fatal to the pilot.

Final Product

After months of experimenting and re-design, production was begun on a much improved Dolphin, the type with which the Germans were to become sadly familiar during the summer of 1918. Substantially the same as its prototype from all outward appearances, the production Dolphin's wings spanned 32 ft. 6 in., both with a chord of 54 in. Their combined total area, including ailerons, was 263.25 sq. ft. Gap was narrow at 51 in., giving a squashed down appearance. Dihedral of both wings was 2-1/2 deg. It should be explained here that a last minute rigging change was made which affected all Dolphins beginning with the fifth production model. Wings of the first four ships were set at 1-3/4 deg. incidence throughout and back-staggered 13 in. From the fifth ship onward, incidence was increased to 2 deg. throughout and stagger reduced to 12 in.

Build the ORBIT Now!

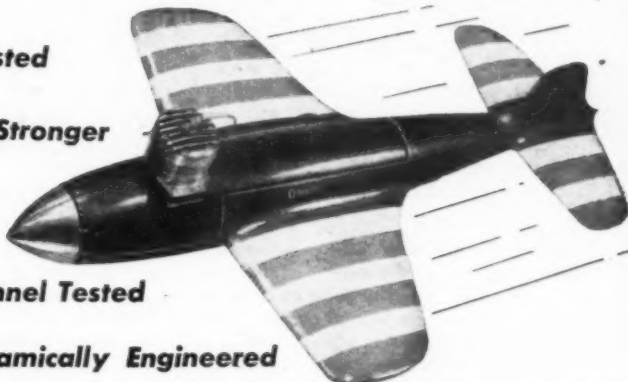
BE READY FOR THE SPEED TRIALS

✓ **Flight Tested**

✓ **8 Times Stronger**

✓ **Wind Tunnel Tested**

✓ **Aerodynamically Engineered**



4 Easy Steps Builds This Super-Speed Job



1. Assemble pre-formed parts



2. Cement-Trim-Install motor

Yes, only four steps builds this stronger, faster Control Liner.

- (1) Cement flanged lips and tack, to hold parts in alignment.
- (2) Remove tacks and trim flange off.
- (3) Assemble remaining small parts.
- (4) Mount motor and control lines.

Now you are ready to try for new speed records with no crackup worries. The ORBIT is 8 times stronger AND you can insure it against crackup damage. SEE COUPON—

Kit—\$6.95

FORMACRAFT CORP.

BARBERTON, OHIO

Clip this Coupon

Present this coupon to Hobby Dealer for complete information. If your dealer cannot supply you—Write us.

I want the ☐ ORBIT. ☐ P-39

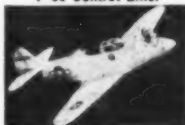
Name

Street

City..... State.....

MR. DEALER—Do you have your display models? If not, write today.

P-39 Control Liner



Fiberplastic Scale Model

528 PAGES

205 DIAGRAMS & PLANS

"Model Airplane Design" by C. H. Grant
THE COMPLETE INSTRUCTOR ON MODEL FLYING!

4th Printing

Only \$3.75 at your favorite model or book store . . . or order from publisher, Air Age Inc., 551-5th Ave., New York 17.

*Everything in
Model Airplane
News*

INQUIRIES INVITED FROM WESTERN DEALERS

STEWART P. ELLIOTT

820 Mission St.

San Francisco 3

IT'S ALMOST UNBELIEVABLE BUT—

"Liquid Dynamite"

REVOLUTIONARY NEW CONTEST FUEL RUNS MODEL ENGINES WITHOUT COIL, CONDENSER, SPARK PLUG OR BATTERIES!

Carry the ignition in your pocket. Once the engine is started and reaches normal operating temperature, ignition is disconnected and goes right back into your pocket.

WHAT CAN YOU DO WITH LD?

Increase the speed of your present models at least 10 MPH... Build models lighter and faster... Mix LD with other fuels for added power... Convert any solid to a flying model... With LD you can enter a new engine in any contest. LD will start it and keep it running. It's the perfect break-in fuel... LD lubricates better—is cooler burning—contains 25% High Grade Castor Oil... LD won't harm your engine because LD does not contain ether or picric acid... LD can be used in race car and boat engines just as efficiently.

\$1.95

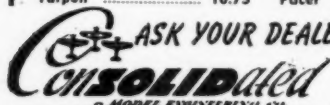
Pint.
Plus
Dealer
Shipping
Charges

FREE: Write for FREE literature on LD. Send us your motor make and receive correct prop specifications for use with LD.

MADE FOR EACH OTHER

LD and Consolidated Flying Models

Aero Puppet	\$ 5.95	Bay Ridge Mike	\$2.00	Strato-Spear	\$2.95
Roamer	2.95	Pacer C	4.95	Javelin A & B	3.95
Tarpon	10.75	Pacer B	3.95	Topper A	3.50
				Diamond Demon	2.00



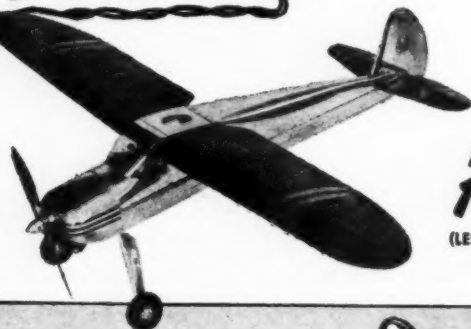
ASK YOUR DEALER—

3087 Third Avenue
New York 56, N. Y.

MA-4

CASALAIRE

"Flying Perfection"



Retails
1850
(LESS ENGINE)

This beautifully designed, aluminum, control line flyer is a winner in looks and performance... It's rugged and durable yet its lines are smooth and sleek... Casalaire is easy to build — EASIER TO FLY!!!

Ask your dealer for a Casalaire today!

Mr. Dealer: Casalaire is available now... Write for discounts.



SPECIFICATIONS

Aluminum Fuselage, Cowling
Fin and Landing Gear.
Balsa and Silk Span Wing
Wingspan 45 in.
Length 30 in.
Takes "B" or "C" engine.

TISON BROS. 2226 S. SEPULVEDA BLVD., Dept. B
WEST LOS ANGELES, CALIFORNIA

by moving the upper wing forward the difference. These changes were dictated by a relocation of the fuel tank in the fuselage to obtain a better center of gravity condition. It was intended originally to place the tank on the fuselage floor behind the pilot. With the fifth airplane, however, the fuel tank was placed directly under the pilot's seat.

Unbalanced ailerons with a generous combined area of 38 square feet were fitted to both upper and lower wings. Wings were braced by two pairs of struts on either side, the lower pair attached directly to the fuselage and the upper panels attached to a wood strut and steel tube center section structure which surrounded the cockpit and was left uncovered.

The Dolphin's unusually deep fuselage completely filled the gap between the wings with the pilot so seated that his eyes were on a level with the upper wing. Centered in the uncovered center section, he was able to see freely approximately 20 deg. forward over the nose; straight down to either side, front and rear except where vision was blanketed by the lower wing; full 360 deg. above the upper wing; and directly aft. Overall length of the production Dolphin was 22 ft. 3 in.

Procurement troubles with the prototype nose radiator were eliminated by installing right- and left-hand radiators outside the fuselage just above the trailing edge of the lower wing. This change actually improved the pilot's forward vision. The spinning and poor recovery characteristics of the prototype were corrected by re-design of the vertical tail surfaces into the peculiarly shaped fin and balanced rudder apparent in the accompanying photographs. These enlarged surfaces, in addition to removal of forward side area by eliminating the nose radiator, provided the Dolphin with excellent directional and spiral stability.

Performance

Performance-wise, the production Dolphins left little to be desired for a 1918 service type. The first operational models officially weighed in at 1,406 lbs. empty and grossed 1,881 lbs. Fuel weighing 194 lbs., sufficient for a 230 mile range, was included in this gross figure. Wing loading in this condition was given as 7.3 lbs. and power loading, 9 lbs. At sea level the Dolphin clipped off 136 mph; 131.5 at 6,500 ft.; 128.5 at 10,000 ft.; and 124 mph at 15,000 ft. Its ceiling at this weight was 23,500 ft., and landing speed 40 mph. Times of climb to those altitudes were respectively 4.9, 8.25, and 14.7 min.

But like all other planes in either World War, the Dolphin was soon bulging with added equipment, more fuel and sundry things which increased its gross weight and knocked down its performance. One of the first additions of weight went into two movable Lewis machine guns mounted on the front spar of the centersection, augmenting the two standard synchronized Vickers guns in front of the pilot. Then came the addition of still more fuel, more ammunition, and finally oxygen for the pilot. And as its performance suffered, the Dolphin's most desired characteristics were balanced one against the other to recover the loss. The first things to go were the two centersection mounted guns and the oxygen. Actually Dolphins were flown at times with a gross weight of 2,018 lbs. as an approved gross, where the speed dropped to 111.5 at 10,000 ft.; climb to that altitude was increased to 11.7 min; and ceiling was reduced to 18,500 ft. On special occasions Dolphins were flown with gross weights as high as 2,300 lbs.

but such a loading was not generally practiced.

Not all this performance loss was due to weight increases, however. Resistance of overhanging guns, flare shields, bombs, bomb racks and other equipment took their toll of speed, climb and ceiling.

Because of its effective ailerons area, the Dolphin possessed an excellent rate of roll and full lateral control down to and including the stall. In normal level flight attitudes all controls moved easily with little pilot effort. But at high speeds, as in a long dive, the rudder and elevator controls tended to stiffen up considerably, and too sudden pressure on the stick could pull the wings off. While flying straight and level, lines of the Dolphin made it appear to be tail heavy and it seemed to be flying level in a very shallow dive. This attitude fooled a great many German pilots because the Dolphin accelerated quickly in a dive and got into a fight more quickly than was expected.

As an all around single seater, the Dolphin exceeded anything the British manufacturers were able to put out in squadron quantities before W.W.I. ended. Other types perhaps bettered it in specific items of performance, but as a package the 5F.1 was hard to beat. It was different enough from the usual run of fighters that a special school was set up using 180 hp Dolphins as transitional or advanced trainers. Yet the 5F.1 possessed enough good characteristics that a 300 hp version was built and tested for production in 1919 and which the U. S. and French air services were contracting at the time of the Armistice.

These two models will be described and illustrated together with a structural analysis of the 200 hp Dolphin in these pages next month.

Plane on the Cover

(Continued from page 26)

"Ducks." Grumman, Swirbul and the Navy put their heads together and came up with the only solution: get someone else to build it!

The result was a new company, Columbia Aircraft Corp., located nearby in Valley Stream, Long Island. They were ready and willing to do the job, and the contract was signed at a time when Corregidor was falling and the Japs were steaming and flying in ever-increasing areas in the South Pacific.

The first airplane was completed in the summer of 1943 and production deliveries began in October. By the end of the year more than a dozen were in service and production was mounting.

But the old "flying shoehorn" wasn't through! The Navy still had a fondness for a type it had used for more than 20 years! One thing it was willing to give up was the singing wires and interplane struts of the biplane design.

Considerations of space limitations made it clear at the start that the fuselage location of the retracted landing gear was out of the question. This created a major design problem because of the midwing (and therefore high) location of the wing. The result was an awkward location of the main gear trunnions outboard on the wing with the wheels folding inboard and up into recesses provided in the wing lower surface. Location of the nose wheel in the tip of the "shoehorn" was a natural, however, although presenting a complex structural problem.

(Turn to page 79)

TWIN-IGNITION DUAL COIL

NOW—DUAL efficiency without the penalty of double weight and space. One SMITH DUAL does the job. Combines the power of 2 super-efficient coils in one convenient unit. One secondary lead may be grounded without affecting the other lead. Same size as Big Shot \$4.50

FINE CRACKER

model with even battery drain than Famous Smith throughout. A winner in U. Control.

\$2.75

BIG SHOT

Now only 1" in diameter with convenient mounting brackets; operates on 3 volts

\$3.00

COMPETITOR

New Clear Thru! Hotter spark, less battery drain. New mounting clips. No soldering.

\$1.95

(Additional clips 6¢ pr.)

SMITH COILS

"First Because They Last"

NATHAN R. SMITH MANUFACTURING CO. FREE * DECALS
105 Pasadena Avenue • South Pasadena, California
and instruction book. Send for them.

AUSTIN *Craft*

NEEDLE VALVE
A-C needle valve adds motor efficiency. Ready to install for contest-winning performance. 75c

ARMY TRUCKS
1/2" scale models of 1 1/2" & 2 1/2" tonners. Kits complete with plans. \$1.25

MIGHTY JEEP
A-C famous model. 1/2" scale. With full size plans. Kit, 75c

"HOTCHA" COIL
Especially for post-war high-speed motors. With H-T lead. \$2.50

HI-O GAS TANK
All metal, light in weight. Hot fuels can't melt or crack it. Thousands in use. Fits filler cap. Install in 10 min. Only 50c

"Headliners!"

A-C BATTERY BOXES

For penlite, 1" & 1 1/4" batteries. Dural metal. Positive contact. Each only 40c

MOTOR MOUNTS

Aircraft specification material. Drilled for mounting. 1 1/4" x 3 1/4" size, pr. 30c. Hold your motor securely. 3 1/2" x 3 1/2", 45c pr.

BUCKBOARD

Utility wagon of Western cattlemen. Free-rolling wheels, tongue & singletree. Scale 1/2" to ft. Kit, \$1.00.

AUSTIN *Craft*

431 So. Victory Blvd., Burbank, Calif.
Prices quoted plus postage. See your dealer first.

DISSATISFIED?

If You Are Dissatisfied With Slow Shipments—Inferior Service—Get the Habit of Regularly Ordering From Holcomb's!

FIRST: We Stock All Leading Lines Of Model Airplane Kits, Motors, Full Line Of Accessories And Full Line Motor Parts.

MR. DEALER!
Quickly Repair That Motor By Buying Motor Parts From Us.

Our Location In The Center Of The United States Assures You Fast, Dependable Service With Low Cost To You And Larger Profits. Write For Our Latest Catalogue And Other Price List—Free! Get On Our Regular Mailing List.

ESTABLISHED IN 1938

Operated By An Active Model Builder & Designer. Sponsor Of Model Contests. World War II Veteran.

STARTING A MODEL SHOP? Write Us. Drive In Or Phone Us. We Can And Will Help You—Now!

MOTORS

Super Charged Thunderbird .645

Super Champion Atwood .604

De Long 30

Cannon "300" class B

Cannon "358" class C

Madwell "49" class C

Vivell "35" class C

Bantam A class A
Rocket "46" class C
Viking Twin large C
Forster
Torpedos
Bullet class B
... Many others . .

KITS

Scientific
Berkeley
Comet

Cleveland
Capitol
Consolidated
Girard
Snafu
Zandi
Mardix Challenger
Ruehl Speed Boats
Fio Torque Props
Comet Props
Supr Scrw Props
Rite Pitch Props

Aero Coils-Condensers
U.S. Ignition Coils-Condensers
Smith Coils-Condensers
Testor
Hece Wheels
Falcon
Hell Hammer Kits
Jim Walker's
... And So Many Others . .

We are shipping into all 48 States; also to Canada, Mexico, Hawaii and Cuba, besides other foreign countries.

We firmly believe you will enjoy doing business with Holcomb's—either starting a new shop or increasing your present profits.

Get The Habit! Order From

JOBBER MEMBER OF MIA

WHOLESALE ONLY

HOLCOMB GAS MODEL SUPPLY CO.

DON D. HOLCOMB, SR.

Office Phone No. 24 or call No. 37

ALMA, KANSAS

JERRY BROFMAN and SIDNEY MICHAELS

(Formerly of Vet-Aero Co.)

(Formerly of Eagle and Ranger Aircraft)

announce the formation of

ENTERPRISE MODEL AIRCRAFT AND SUPPLY CO.

90-03 LIBERTY AVE., OZONE PARK, N.Y.

Enterprise presents a line of 5 scale control line models of the most famous American racing planes ever to take to the sky.

Each model is a complete kit including wheels, all balsa wood, motor mount—and the famous "Slide-Controller".* Each kit sells for the unbelievable price of \$1.95, except Laird's "super-solution," which is priced at \$2.25.

* Pat. Pending

Each of these models are designed by that famous scale model wizard, SID MICHAELS, designer of the famous Ranger "Gee-Bee" and "Lancer."

DEALERS AND JOBBERS: WRITE FOR DETAILS

Remember:

Your best bet for Class "C" Free Flight is still the "Super-Sunduster"

Complete Kit **\$8.95** (The Super-Sunduster is now being manufactured by Enterprise).

Jobbers and Manufacturers: Write for Cut Balsa Price List (Only Geo. D. Emery Balsa Sold)

Here is the List:

No. 1. Laird's "Meteor"

Flown by Roscoe Turner

No. 2. Frank Hawk's "Time

Flies"

No. 3. Roscoe Turner's "Wedell

Williams"

No. 4. Benny Howard's "Mister

Mulligan"

No. 5. Laird's "Super-Solution"

Flown by Jimmy Doolittle

No. 1. The Laird-Turner

"METEOR"

Only \$1.95 Add 15c by Mail



MODEL AERONAUTIC ENCYCLOPEDIA

VOLUME No. 1

Edited by FRANK ZAIC

• Greatest tool of model designers is a complete record of past discoveries, experiments and inventions. Just think of the time, effort and money you could save if you had such information at your finger tips. Therefore, consider M.A.E. Vol. 1.

• Major portion of data and plans in VOLUME 1 was taken from the 1934, 1935-36, and 1937 MODEL AERONAUTICS YEAR BOOKS. It was during this period that model aeronautics as we know it today was developed. So that besides being a scientific resume of that period, this book is also a roster of Model Aeronautical Pioneers.

• Included: Valuable contributions and hints. One of the finest collections of world record models; 20 gas models, 27 outdoor rubber and 30 indoor designs. If you are planning to make indoor models this year, you'll need this book.

SPECIAL NOTE: Those of you who have request reprints of the Year Books, please order your copy as soon as possible. The initial printing is limited.

Price \$1.00 Postpaid or at your dealer.

Do you have a copy of

MODEL GLIDER DESIGN?

Why not? If you only knew what you are missing! Order a copy today. New Price only \$1.00 Postpaid.

MODEL AERONAUTIC PUBLICATIONS
203 East 15th Street New York City 3.



PITTSBURGH'S WHOLESALE DISTRIBUTOR...

✓ All leading lines

- * MODEL AIRPLANES
- * MODEL BOATS
- * MODEL SUPPLIES
- * FULL LINE OF MOTORS

Dealer's Price List Available Upon Request

WHOLESALE ONLY

J. SPOKANE & CO., Inc.

1106 Fifth Avenue, Pittsburgh 19, Penna.

5 HELPFUL BOOKS FOR MODELERS

(See page 60)

CANADA'S LARGEST & MOST COMPLETE HOBBY SUPPLIERS

Featuring

MODEL AIRPLANES

MODEL BOATS

NEW GAS ENGINES

BALSA WOOD & SUPPLIES

MODEL CRAFT & LLOYD'S KITS

Take your choice of these two famous names—now made by Model Craft Hobbies Limited.

Write for our Illustrated Catalogue.

DEALERS ENQUIRIES SOLICITED

Model Craft Hobbies Limited

44 Wellington St., West
Toronto Dept. 124 Canada

Major design problem, though, was the wing. The Navy demanded a 50 ft. span, maximum, for carrier deck operations. Additional load of the four passengers meant increased weight with a restricted wing area and with the same engine specified! Within these narrow limits the Columbia design staff set to work.

The Columbia XJL-1 was completed in late summer 1946 and flew for the first time in the early fall. It combines the best of the old features—proved by time and some of the most unusual usage in Naval Aviation history—with the best of the new. It is powered by the famous Wright Cyclone R-1820 engine which, in its latest production version, produced 1350 hp for takeoff. This drives a Hamilton Standard constant speed propeller.

The XJL-1 has a 50 ft. span and is 43 1/2 ft. long. It stands 16 ft. high and weighs more than six tons fully loaded. It has a top speed past the 200 mph mark and can climb to 20,000 ft. It has a range of more than 2000 miles.

The pilot and navigator-radio-operator are located in the upper fuselage within a sliding canopy. The r/o also acts as gunner when protection is needed from enemy aircraft. The four passengers, or stretcher-cases, are located below within the hull section of the fuselage. Additional armament may be carried in the form of a medium-size bomb under each wing or depth charges for anti-submarine patrol work.

True to its tactical classification, the XJL-1 has utility, for it may be used for passengers, cargo transportation, scouting or observation work, courier service, anti-submarine patrol, aerial photography, ambulance service, over-water mercy missions—in short, about every duty that doesn't require tangling with enemy fighters, and about every duty that does require safety, ruggedness and dependability!

Newsletter

(Continued from page 10)

ings of A.M.A. he impressed everyone with his sincere efforts on behalf of the model builder and the splendid job he had done for aeromodeling in his home city.

Model aviation suffered an irreparable loss with his passing. It is hoped that the Akron program he helped launch will be continued as a memorial to Glen Rymer and his outstanding work.

PIONEER GAS MODEL enthusiasts frequently feel lost in the swelling band of power plane flyers, and little wonder considering how the ranks of the motor maniacs have expanded within the past 10 years. Not long ago a charter member of the old International Gas Model Airplane Assn. (I.G.M.A.A.), the first big gas club, requested one of the "pioneer certificates" attesting to the fact he was an "early bird" builder.

Well, the gas modeler just hasn't any pioneers' organization like the full scale "Early Bird" or "Quiet Birdmen" clubs. Several times we have brought up the matter in these columns and have heard from several of the earlier experts. All were unanimous in their desire for some sort of recognition.


Realizing this, the officials of Air Age Inc., publishers of this magazine, have offered to issue "Early Bird" certificates to I.G.M.A.A. ex-members if enough desire them. Frankly, we think the response should be terrific. But to determine just how many chaps are still around and reading the mags, it is requested that those desiring such recognition drop a postcard to the Early Bird

The Famous

DYNA-JET

Miniature Jet Gasoline Engine

The Ultimate in Engines!



PATENTS PENDING

World's Easiest Starting Engine. Started at -65°F., after 20-hour "soak" at this temperature, without pre-heat. No other internal combustion engine has ever been started under such conditions. Thus easiest starting at normal temperatures is assured.

World's Most Compact Miniature Jet Engine. Only 2 1/4" long, Dyna-Jet is the smallest successful jet gasoline engine ever built.

World's Simplest and Most Reliable Miniature Engine. Has only one moving part—easily replaced by removing one screw. No needle valve to adjust—fixed orifice metering jet is installed at factory. Simple suction fuel feed—no pressurized fuel tank required. No ignition system required once engine is started—all you need in your model is a fuel tank and Dyna-Jet.

World's Most Thoroughly Guaranteed Miniature Engine. Dyna-Jet engines are guaranteed: 1. Against defects in material or workmanship for a period of ninety days. 2. To start easily with a hand tire pump as an air source. 3. To develop in excess of 3.5 pounds static thrust without ram air.

World's Most Powerful Miniature Engine. Leading helicopter manufacturer* reports 4.5 pounds static thrust without ram air. This is the equivalent of 2.14 hp. exerted through a 70% efficient propeller at 125 mph.

(*Name on request.)

Thrust: 3 1/2 lbs. plus — Length: 2 1/4" Weight: 16 oz. — Max. diameter: 2 1/2" Fuel: gasoline — Min. diameter 1 1/4" Lubrication: none required. Operates on pulse jet cycle at 260-280 cycles/second.

Every engine started with hand tire pump and tested for power at factory.

\$24.50
WITH SPARK PLUG

If your dealer cannot supply you, order direct from factory, giving name of dealer.

AEROMARINE COMPANY

5201 Old Springfield Pike Dayton 3, Ohio

21 A-B-C GAS JOBS by TOP DESIGNERS!

Get your copy of "AIR AGE GAS MODELS"! Complete plans, photos and instructions; also helpful hints for all gas modelers

Only \$2.00 at your model or book shop, or direct from Air Age Inc., 551 - 5th Avenue, New York 17



FEATURING

- *ready cut hardwood and plywood
- *pre-cut balsa tail
- Pre-Cut plywood bulkheads
- All necessary hardware
- Formed steel running gear, planked with 100% Balsa. *full size plans.
- Tethered control or free running. Overall length approximately 20".

\$7.50
Less
Wheels
and Motor
No postage required



"PARGY"

Dealers write for discounts

ARCTIC MODEL COMPANY

1370 DOWNING AVE., BENTON HARBOR, MICHIGAN

**COMBINATION MODEL
FOR ICE, WATER AND
LAND. CLASS A & B.**

**A 3-way model
for year round
ENJOYMENT**

Quickly interchangeable from one type to another.





SNUFFY

\$3.95

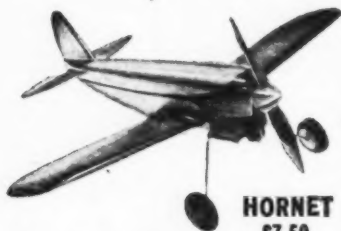
SNUFFY HAS BEEN
ACCLAIMED AN INSTANT SUCCESS.
SNUFFY IS CON-
STRUCTED IN THE

CONVENTIONAL WAY—A SUPERB TRANSITION KIT—FROM
RUBBER TO GAS CONTROL LINE. WHY NOT MAKE IT YOUR
NEXT MODEL?



SWIFT
\$7.50

A DELUXE READY-CUT KIT
COMPLETE IN EVERY DE-
TAIL.



HORNET
\$7.50

A BUILD IT TONIGHT FLY
IT TOMORROW MODEL.

GIRARD MODEL INDUSTRIES

P. O. BOX 609 • SAN MATEO, CALIF.

A-26 INVADER

Control Line
SCALE MODEL



*First Twin Engine Model
with all these features:*

Designed to fly on two class B or C engines. Maintains
flight on either engine. Remarkable speed—flies 50 to 80
mph on two engines. Wing span is full 60 inches, yet the
model weighs only 4 lbs. Completely planked. Bulkheads
are pre-cut. Equipped with formed landing gear, cushion
tires. Canopy gives it a realistic appearance. Unusually
easy to fly and control.

COMPLETE KIT: Contains full scale pattern and de-
tailed instructions, wheels, ready formed landing gear,
and enough grade A-1 balsa to build and plank.
Order from your dealer or sent direct.

DEALERS: Inquire about choice dealer franchises.

AERO-DESIGN MODEL MFG. CO., 120 So. 11th St., Lincoln, Nebr.

**IMMEDIATE
DELIVERY**

If your dealer doesn't
have the twin-engine
control line ARMY A-26
INVADER, we'll mail
direct.

\$15.00

Plus 25c postage

Stunt King biplane, all
materials pre-cut. 38"
wing span, \$6.95. Add
25c postage if ordered
direct.

Modelers, % MODEL AIRPLANE NEWS, 551 Fifth
Avenue, New York 17, N.Y. On it give your
name and address, when you started flying
gas models, and what evidence you have
now in your possession of that—preferably
your I.G.M.A.A. membership card. Don't
send this evidence until it is requested!

So act right away if you are one of the
"oldtimers", and spread the good word
around to any of your buddies who might
qualify. Eligible are those who flew gas
models prior to 1938.

From England comes reports of the Third
National Model Aircraft Exhibition spon-
sored by the London newspaper, *Daily Ex-
press*, and the *Aeromodeller* magazine, and
held in Dorland Hall in London. This
turned out to be a wonderful show and
exhibit. Highlight of the affair was the dis-
play of new diesel engines which are fast
taking the play away from standard igni-
tion motors. Some 15 different diesels are
being readied by various British manufac-
turers, and in a recent international meet
at Eaton Bray, England, entrants from the
continent (France, Belgium, Czechoslo-
vakia, Denmark and Holland) stole the
show with their highly perfected compres-
sion-ignition engines.

An outstanding feature of the London
show was electric "round-the-pole" flying
in which remotely operated control line
models made exhibition flights powered by
electric motors. Current is supplied to spe-
cially made electric motors through the
tether wires and most of the models hit a
speed of 12 to 20 miles per hour—sufficient
to become airborne and fly under control.

We will have a first hand account of the
exhibition and British modeling in general
when C. S. Rushbrooke, editor of *Aero-
modeller*, arrives in America soon on a
goodwill mission to American modelers.
M.A.N. Editor Howard McEntee is arrang-
ing for Mr. Rushbrooke to visit various
model clubs in the New York area, and it is
expected that a series of informal luncheons
and dinners will serve to acquaint the
wellknown English author, designer, build-
er and editor with American modelers and
American model activity.

Simplex 25

(Continued from page 28)

and just run it back and forth a few
times, then wipe again. Repeat this half
a dozen times and the bore is lapped.
The main consideration is that the barrel
should be straight or very slightly bell-
mouthed toward the bottom. If the barrel
is ground you should have no trouble to
achieve this; but if it is lapped, it is ad-
visable to make a plug gage out of brass
or any metal which is handy and test
the amount of taper with it. You can
actually check for the degree of com-
pression the piston will have.

Tap the sparkplug hole and file in the
exhaust ports while the piece is held in
the lathe. Be careful when filing the
ports because if they are not evenly
spaced there will not be sufficient space
for the transfer passages. If the particu-
lar lathe you work on has an indexing
arrangement this will be a great help.
The exhaust ports are 1/8" high and 7/16"
wide.

Round off the cylinder fins to the
proper shape with a smooth file before
tackling the next job, that of cutting the
bypass or transfer passages.

The bypasses can be made in two ways:
They can be ground in with the tool-post
grinder, using a 3/8" diameter wheel; in
this case the work does not have to be
removed from the chuck. A quicker way
is to mount the work in the milling at-
tachment and make the cuts with a 3/8"
endmill. If the latter method is used,
mark the work before taking it out of the
chuck so you can get it running fairly
true when it is rechecked to make the
two small steps at top of the cylinder

and to cut off. The bypasses are 1/32" deep and extend 41/64" into the cylinder. If they are made by milling, the cutter and work should be set so the full 1/32" depth can be made. Then run the work toward the headstock so the end teeth of the mill will do the cutting.

PISTON—The piston is also made of Meehanite. Mount the remainder of the Meehanite bar in the chuck and drill in 3/4" deep with No. 20 drill (.161), then bore the hole to .615" diameter and 3/8" deep. Now cut down the outside diameter to within a thousandth of the size of the plug gage which was used to check the cylinder box. The last thousandth of an inch can be taken off gradually with emery paper. Frequent tries into the cylinder and checks with the micrometer are necessary to get a good fit. As the plug gage goes up to the top of the cylinder the size of the bore is known at that point. If piston goes in the cylinder as far as the ports it is satisfactory for the time being. At this point the piston should be cut away from the Meehanite rod with a parting tool.

SOCKET—Use the 3/4" aluminum for this part. Do not forget that the top nipple should be a good fit into the hole at top of the piston. The outside diameter of the socket is 19/64" and the hole is made with a No. 3 (.213) drill; the hole depth is 3/16". The socket may now be riveted into the piston, and for this job the socket closing and holding tool is employed. Insert the aluminum fitting in place from the inside of the piston and put the pointed end of the tool against it inside the piston. Rivet the nipple on top of the piston, taking care not to hit the piston with the hammer as this may knock it out of shape or even break it. If the nipple was made a snug fit into the hole it will not require much riveting to produce a firm anchorage.

CONNECTING ROD—Before the connecting rod can be started, a form tool to cut the two different sizes of balls at the ends of the connecting rod should be made.

Plans for this tool will be seen at top of page 29 and are shown double size for clarity. First the 3/8" square cold rolled steel is mounted in the milling attachment and center drilled 3/8" from each end, after which the holes are bored through with a small drill, say about No. 30 (.128). The work should be turned to 10 degrees more than right angle to the drill so as to produce proper clearance when it becomes a cutting tool. The final holes are made with No. 3 (.213) and F (.255) drills. Now the end is either ground or filed until exactly half of each hole is removed; then two edges are further cut away to the measurements shown on upper (top) view of the tool. It is important that this tool be reproduced exactly, otherwise the ball ends on the rod cannot be made properly. The smaller hole will make the ball which acts as a universal joint. This ball will be made first so the right lip of the form tool (as it is placed in the lathe) should be left even with the middle of the hole; the other side should be ground shorter, as the drawing shows, to allow for half the thickness of the connecting rod itself. The end which is to form the larger ball should be made just the opposite way since the connecting rod will be at right of the cutting tool when this ball is made.

The finished tool should be surface hardened in Kasenit. This process, which is also known as case hardening, is very simple and can be accomplished at home with a gasoline blowtorch or even on the

The Smile That Won't Come Off!

★ NATIONAL DEALERS are all
Happy Sort of Folks!

Up, up, up go the sales of National Dealers everywhere, because National serves the dealers it supplies so well. These dealers serve their customers better — and make more money, too. That's what makes them happy. We invite those just getting started, as well as established dealers, to write for the new JIFFY CHECK LIST — now almost 5000 advertised items customers ask for — America's hobbycraft showcase.

Get these from National

Casco ELECTRI-CRAFT

Now in one complete set. Casco's finely engineered and precision-made handy power tool outfit. A whole shop full of dependable power tools in one.

Set in steel, walnut finished chest with 36 accessories and instruction booklet.

Retail \$22.50



MORRISTOWN BOATS

Two of the finest and best engineered motor boat kits ever put together. Perfect realism. Amazing performance. Class 8 Motors.

Sea Elf, 21" long. Kit... \$8.00
Sea Gull (illustrated),
26" long... \$10.00

NO RETAIL SALES

STROMBECKER KITS

Complete Line — Immediate Shipment

National MODEL DISTRIBUTORS
150-156 N. WACKER DRIVE, CHICAGO 6, ILLINOIS

For list of WYLAM Enlarged Masterplans . . . See Page 86

CABALINE!!

the flexible control cable that
will not unravel or untwist
when cut. Doesn't kink or
entangle under any
flying conditions.



WILL NOT UNTWIST
WHEN CUT.

Seven strand stainless
steel.

70 lbs. breaking strength.
.015 inch diameter... flexible
and supple.

ASK FOR CABALINE \$2.25
AT YOUR DEALERS... 100 FEET

140 FEET . . . \$3.00



JOBBER AND DEALERS, WRITE FOR DISCOUNT

MARYLAND HOBBY SUPPLY CO.
BOX 1661 BALTIMORE, MD.

**IN ALL THE MEETS THE RECORDS SHOW
IF IT'S A BANTAM
IT'S A WINNER!**



FIRST PLACE in Junior and Senior Control line and Junior and Senior Free Flight at the Nationals at Wichita.

FIRST AND SECOND PLACE (Control Line) Yankee Championship meet at Hartford, Connecticut.

FIRST PLACE (Control Line) at the Vahlhalla, N. Y. meet.

FIRST PLACE (Control Line) Grumman meet.

FIRST PLACE (Control Line) Philadelphia meet.

FIRST PLACE (Control Line) at the Elizabeth, N. J. meet.

\$18.50 less coil and condenser

YOUR BANTAM MAY BE CONVERTED TO SEMI-DIESEL. Ask your dealer about the special fuel mixture for conversion.

BANTAM PRODUCTS INC.

51 CHAMBERS STREET, NEW YORK 7, N. Y.
PLANT: CLIFTON, NEW JERSEY U. S. A.

SPECIAL OFFER

The Following Free With Each Motor

Coil
Condenser
High Tension Lead
Ignition Hook-up Wire
100' Control Line Wire

Fuel Line
Pen Cells
Slide Switch
Alligator Clips
Postage and Packing

GAS ENGINES

Arden .199	\$25.50
Bantam .199	18.50
Cannon 8	19.75
Cannon C	21.50
Delong	19.50
McCoy .49	25.00
McCoy	35.00
Ohlsson 19	14.50
Ohlsson 23	16.50
Ohlsson 40	18.50
Pacemaker	24.95

COILS

Smith (Firecracker)	\$2.75
Electron	1.95
Smith Competitor	1.95

FROOM

ALUMINUM SPINNERS	
1 1/2" dia. \$.75, 1 1/2" dia. \$1.00, 2" dia. \$1.15, 2 1/4" dia. \$1.25, 2 1/2" dia. \$1.50, 2 3/4" dia. \$1.75.	

WHEELS

Hely-Ark Sponge Rubber Wheel	
1 1/2" \$.45, 2" \$.50, 2 1/2" \$.75.	

ACCESSORIES

Champion Spark Plugs	\$.50
Condensers	.35
Alligator Clips, pair	.25
Neoprene Tubing, foot	.35
Swivel Tank U-control	2.50
Ignition Wire, foot	.03
Silkspar, sheet	.10
Slide Switch	.50
High Tension Leads	.25
Shock Absorb. Land. Gear	2.50
Needle Valve Universal	.75
Universal Plug Wrench	.25
Booster Leads, pair	1.00
Motor Mounts	1.50
Adjust. Motor Mounts	1.50
Sae No. 70 Oil, pint	.50
Flashlight or Pen Light Cells	.10

WET CELL STORAGE BATTERIES

Power Plus	
Standard Flight	\$2.75
Heavy Duty	3.50
Booster	3.50
Battery Charger	4.45
Vitamite 2 Volt	2.35

TIMERS

Austin	\$1.50
Comet	1.00
Arden	1.85

PROPS. (GAS MODELS)

Flo-Torque	
8" to 12"	\$.50
13" to 14"	1.00
Hi-Ball	
9" to 12"	.50
13" to 14"	.45

U-CONTROL WIRE

100 ft. 8, 10, 12, 14, 16 thousandths dia.	\$.50
140 ft. (above dia.)	.75

MUSIC WIRE

1/16 dia., 3 ft.	\$.05
3/32 dia., 3 ft.	.10
1/8 dia., 3 ft.	.15

CEMENT, CLEAR DOPE, COLORED DOPE, ETC.

Each 10 cents per oz.
Testors cement 10 cents per tube

U-CONTROL KITS

Eagle Mustang	\$4.95
Eagle Waco	10.50
Super V Shark	4.95
Baby V Shark	2.95
California Sky Chief	6.95
Megow Thunderbolt	3.75
Megow Tyro	3.50
Capitol Navion	7.50
Capitol Presto Liner	5.95
Scientific Cyclone	4.95
Scientific Atomic	3.50
Omeo Special	7.95
Omeo Biplane	3.95

FREE FLIGHT KITS

Eagle Wanderer	\$3.50
Eagle Runt	2.50
Comet Zipper	5.95
Comet Interceptor	3.95
Omeo Air Forerunner	3.95
Megow Baby Quaker	3.00

THE EASTERN SUPPLY CO.
Box 615 New Britain, Conn.
Operated for Active Model Builders

Simple mailing instructions: Print name and address clearly, list items, enclose check or money order. Free packing, handling and postage. No minimum order.

kitchen gas stove. The tool is simply heated to a bright red, the ends dipped in the Kasenit powder, then reheated again and plunged in cold water. This produces a very hard skin on the tool, but the metal beneath this skin retains the original characteristics of the steel. The powder can be had at modest cost at most large hardware stores and is entirely safe to use since it is non-poisonous and gives off no noxious fumes.

Chuck the 3/4" cold rolled piece with about 1 1/2" sticking out of the chuck and turn down the outer 1/2" to about the size of the small ball. Now put the form tool in the tool post and move it straight in very slowly to make the small ball, moving the tool forward until a check with the micrometer shows the ball to be a trifle over .213" diameter. After the ball has been formed, smooth it well using very fine emery cloth. With a pointed bit cut down the connecting rod at left of the ball to about 9/64" dia. and an inch in length; then loosen the chuck and pull the work out another 1/2". Now cut down the portion nearest the chuck to the approximate size of the larger ball. Measure 1 3/8" from center of the small ball and mark the rod. Also make another mark at 1 1/4" from the ball center: this is where the connecting rod shank ends. Turn the rod down to 9/64" dia. at the 1 1/4" mark, then use the form tool to make the larger ball. The connecting rod proper between the two balls can be filed to a slight taper (about .007) and the piece cut off.

File two flats on the large ball until the thickness is reduced to 11/64", center-punch the middle, first checking the 1 3/8" center distance again to get the exact spot for the punch mark, center drill the punch mark, then bore through with a No. 17 (.172) drill. The wall will be little more than 1/32" thick so be careful to have the hole centered. Harden the drilled ball in Kasenit.

We are now ready to assemble piston and rod. For this job the hollow end of the socket closing and riveting tool is used. Insert the small ball of the connecting rod in the aluminum socket and put the tool over the connecting rod. Lay the piston top down on an anvil and strike the pointed end of the tool a few light blows and the socket will be closed neatly.

INTAKE TUBE—First make the intake tube out of the 3/4" aluminum; a piece about 1 1/2" long should be used. Place in the chuck sideways and adjust so that the long axis of the piece is centered. Spot with the center drill and bore a hole slightly smaller (about .001") than the outside diameter of the main bearing so it will be a very tight press fit. Now chuck the work the conventional way and drill the intake tube hole which is 1/4" (the F drill will do for this). Cut to length and round off the bottom with a file as neatly as possible. Press the intake tube on a frontplate so the intake hole will be 3/4" from the rear of the crankshaft thrust bearing. An ordinary vise will be useful for this job.

Hold this piece in the milling attachment by the square portion and drill the 1/4" intake hole right through the bearing. Insert the crankshaft and spot slightly with the center drill. Then remove and drill through one side of the shaft into the hollow center and not touching the other side. Follow up with a No. 1 (.228) drill. Before you try to insert the crankshaft in its bearing, again file off the burr so it will not score the inside of the bearing.

FINISHING—The rest of the work is mostly adjustment and assembly. It may be necessary to shave a little here and there but if the proper step by step procedure is followed, everything will come out all right. Insert the crankshaft, line up the two intake holes and, looking from the rear of the shaft, put a scribe mark 45 degrees to the left of top center and crossing the groove made to locate the crankpin. Center punch where the two lines meet and make a hole with a No. 19 (.166) drill. Make the crankpin out of a piece of 11/64" drill rod about 3/4" long. The crankpin must be a drive fit in the crankshaft hole. If a new drill is used to make this hole it will probably be advisable to use a No. 18 (.169) drill instead of the No. 19 specified. At any rate there should be an "interference" of 2 or 3 thousandths between the stock used for the pin and the hole diameter. The pin can then be driven in without damaging either piece, yet it will never work loose. After driving it through the counter balance, cut off so the projection is 11/64" long.

Cut the timer mounting ring, leaving the hole in the center a thousandth or so small so that this part, too, will be a press fit on the front plate. Force it on far enough to leave 3/8" for the timer case. Now file the 3/16" wide slot in front of the main bearing in which the timer spring actuates. This slot goes diagonally at 30 degrees from left bottom to right top as viewed from the front and is cut half way through the bearing. The cam slot in the crankshaft should coincide with it when the crankpin is at top of the stroke. However, the latter slot is only 1/32" deep so it will not break through the wall of the shaft. Harden the front part of the shaft in Kasevit so that the timer action will not wear away the cam edges. At the same time harden the crankpin as it will "pick up" and seize if left soft. Before hardening the latter, however, make sure the pin is an easy fit in the connecting rod. There may even be a slight looseness here to allow for misalignment of various parts.

Drill the hole for the needle valve (No. 30 drill if you are using a Forster part) in the intake tube. Drill and tap the hole for the 3-48 screw which holds the timer in place and allows it to be moved to change timing. This hole can be marked off through the slot in the timer case when the latter is held in place against the timer mounting ring.

The hole should be marked centrally in the timer case slot. Rotate the timer until the contact points just open when the crankpin reaches top center position. The crankshaft must, of course, be turned counter-clockwise as viewed from front of the motor to determine the position where the points open.

If it is found, when the motor is tried out, that the speed is still increasing when the timer lever reaches maximum advance position, a new hole can be made to allow even more advance.

We are now ready for final assembly. Slide the piston into the cylinder; if it is too tight, make a wood mandrel which will tightly fit the inside of the piston and use very fine emery paper again with the piston turning in the lathe. Just as soon as you get it so it slides above the ports, go very easy and try it often so as not to make it too loose. When it goes in all the way, screw the cylinder into the case with the piston, frontplate and crankshaft properly assembled. Note position of the piston with crankpin at bottom center. If it stops with the top even with the lower edge of the exhaust port, all is well;

Demand Genuine Power Plus

Wet Cells for Every Purpose



H. 3/4" x W. 1 1/4" x Th. 1 1/2"—\$5.50

OTHER POWER-PLUS PRODUCTS

Flight Batteries • Booster Batteries • Battery Chargers • Auto Charging Stands • Rubber Landing Wheels • Tail Wheels



Power Plus Wet Cell Co.

3345 WEST WASHINGTON BLVD., LOS ANGELES 7, CALIFORNIA
455 SCHENECTADY AVENUE, S. BENDER, BROOKLYN 3, NEW YORK

MEMBER



HELICOPTERS—

LEARN more about building models of the fascinating whirligigs... from R. L. Clough who has built dozens of different types. His newest ideas will appear in the May issue of MODEL AIRPLANE NEWS... On Sale at all Newsstands April 8.

BIG Assortment 25c
GUNS & BOMBS
Special big assortment of 10 die-cast finely detailed BOMBS and GUNS

BLOCKBUSTER 3c
Postage 3c

PROPELLERS			STANDARD TYPE		
ALUMINUM			Die Cast White Metal		
Adjustable Pitch	2 Bladed	3 Bladed	2 Bladed	3 Bladed	
7 1/2" 25	11 1/2" No. 13... .05	11 1/2" No. 13... .05	11 1/2" No. 13... .05	11 1/2" No. 13... .05	
8" 30	11 1/2" No. 14... .07	11 1/2" No. 14... .07	11 1/2" No. 14... .07	11 1/2" No. 14... .07	
10" 35	11 1/2" No. 15... .08	11 1/2" No. 15... .08	11 1/2" No. 15... .08	11 1/2" No. 15... .08	
	11 1/2" No. 16... .10	11 1/2" No. 16... .10	11 1/2" No. 16... .10	11 1/2" No. 16... .10	
	11 1/2" No. 17... .12	11 1/2" No. 17... .12	11 1/2" No. 17... .12	11 1/2" No. 17... .12	
	11 1/2" No. 18... .15	11 1/2" No. 18... .15	11 1/2" No. 18... .15	11 1/2" No. 18... .15	
	11 1/2" No. 19... .18	11 1/2" No. 19... .18	11 1/2" No. 19... .18	11 1/2" No. 19... .18	
	11 1/2" No. 20... .20	11 1/2" No. 20... .20	11 1/2" No. 20... .20	11 1/2" No. 20... .20	
	11 1/2" No. 21... .22	11 1/2" No. 21... .22	11 1/2" No. 21... .22	11 1/2" No. 21... .22	
	11 1/2" No. 22... .25	11 1/2" No. 22... .25	11 1/2" No. 22... .25	11 1/2" No. 22... .25	
	11 1/2" No. 23... .28	11 1/2" No. 23... .28	11 1/2" No. 23... .28	11 1/2" No. 23... .28	
	11 1/2" No. 24... .30	11 1/2" No. 24... .30	11 1/2" No. 24... .30	11 1/2" No. 24... .30	
	11 1/2" No. 25... .35	11 1/2" No. 25... .35	11 1/2" No. 25... .35	11 1/2" No. 25... .35	
	11 1/2" No. 26... .40	11 1/2" No. 26... .40	11 1/2" No. 26... .40	11 1/2" No. 26... .40	
	11 1/2" No. 27... .45	11 1/2" No. 27... .45	11 1/2" No. 27... .45	11 1/2" No. 27... .45	
	11 1/2" No. 28... .50	11 1/2" No. 28... .50	11 1/2" No. 28... .50	11 1/2" No. 28... .50	
	11 1/2" No. 29... .55	11 1/2" No. 29... .55	11 1/2" No. 29... .55	11 1/2" No. 29... .55	
	11 1/2" No. 30... .60	11 1/2" No. 30... .60	11 1/2" No. 30... .60	11 1/2" No. 30... .60	
	11 1/2" No. 31... .65	11 1/2" No. 31... .65	11 1/2" No. 31... .65	11 1/2" No. 31... .65	
	11 1/2" No. 32... .70	11 1/2" No. 32... .70	11 1/2" No. 32... .70	11 1/2" No. 32... .70	
	11 1/2" No. 33... .75	11 1/2" No. 33... .75	11 1/2" No. 33... .75	11 1/2" No. 33... .75	
	11 1/2" No. 34... .80	11 1/2" No. 34... .80	11 1/2" No. 34... .80	11 1/2" No. 34... .80	
	11 1/2" No. 35... .85	11 1/2" No. 35... .85	11 1/2" No. 35... .85	11 1/2" No. 35... .85	
	11 1/2" No. 36... .90	11 1/2" No. 36... .90	11 1/2" No. 36... .90	11 1/2" No. 36... .90	
	11 1/2" No. 37... .95	11 1/2" No. 37... .95	11 1/2" No. 37... .95	11 1/2" No. 37... .95	
	11 1/2" No. 38... 1.00	11 1/2" No. 38... 1.00	11 1/2" No. 38... 1.00	11 1/2" No. 38... 1.00	
	11 1/2" No. 39... 1.05	11 1/2" No. 39... 1.05	11 1/2" No. 39... 1.05	11 1/2" No. 39... 1.05	
	11 1/2" No. 40... 1.10	11 1/2" No. 40... 1.10	11 1/2" No. 40... 1.10	11 1/2" No. 40... 1.10	
	11 1/2" No. 41... 1.15	11 1/2" No. 41... 1.15	11 1/2" No. 41... 1.15	11 1/2" No. 41... 1.15	
	11 1/2" No. 42... 1.20	11 1/2" No. 42... 1.20	11 1/2" No. 42... 1.20	11 1/2" No. 42... 1.20	
	11 1/2" No. 43... 1.25	11 1/2" No. 43... 1.25	11 1/2" No. 43... 1.25	11 1/2" No. 43... 1.25	
	11 1/2" No. 44... 1.30	11 1/2" No. 44... 1.30	11 1/2" No. 44... 1.30	11 1/2" No. 44... 1.30	
	11 1/2" No. 45... 1.35	11 1/2" No. 45... 1.35	11 1/2" No. 45... 1.35	11 1/2" No. 45... 1.35	
	11 1/2" No. 46... 1.40	11 1/2" No. 46... 1.40	11 1/2" No. 46... 1.40	11 1/2" No. 46... 1.40	
	11 1/2" No. 47... 1.45	11 1/2" No. 47... 1.45	11 1/2" No. 47... 1.45	11 1/2" No. 47... 1.45	
	11 1/2" No. 48... 1.50	11 1/2" No. 48... 1.50	11 1/2" No. 48... 1.50	11 1/2" No. 48... 1.50	
	11 1/2" No. 49... 1.55	11 1/2" No. 49... 1.55	11 1/2" No. 49... 1.55	11 1/2" No. 49... 1.55	
	11 1/2" No. 50... 1.60	11 1/2" No. 50... 1.60	11 1/2" No. 50... 1.60	11 1/2" No. 50... 1.60	
	11 1/2" No. 51... 1.65	11 1/2" No. 51... 1.65	11 1/2" No. 51... 1.65	11 1/2" No. 51... 1.65	
	11 1/2" No. 52... 1.70	11 1/2" No. 52... 1.70	11 1/2" No. 52... 1.70	11 1/2" No. 52... 1.70	
	11 1/2" No. 53... 1.75	11 1/2" No. 53... 1.75	11 1/2" No. 53... 1.75	11 1/2" No. 53... 1.75	
	11 1/2" No. 54... 1.80	11 1/2" No. 54... 1.80	11 1/2" No. 54... 1.80	11 1/2" No. 54... 1.80	
	11 1/2" No. 55... 1.85	11 1/2" No. 55... 1.85	11 1/2" No. 55... 1.85	11 1/2" No. 55... 1.85	
	11 1/2" No. 56... 1.90	11 1/2" No. 56... 1.90	11 1/2" No. 56... 1.90	11 1/2" No. 56... 1.90	
	11 1/2" No. 57... 1.95	11 1/2" No. 57... 1.95	11 1/2" No. 57... 1.95	11 1/2" No. 57... 1.95	
	11 1/2" No. 58... 2.00	11 1/2" No. 58... 2.00	11 1/2" No. 58... 2.00	11 1/2" No. 58... 2.00	
	11 1/2" No. 59... 2.05	11 1/2" No. 59... 2.05	11 1/2" No. 59... 2.05	11 1/2" No. 59... 2.05	
	11 1/2" No. 60... 2.10	11 1/2" No. 60... 2.10	11 1/2" No. 60... 2.10	11 1/2" No. 60... 2.10	
	11 1/2" No. 61... 2.15	11 1/2" No. 61... 2.15	11 1/2" No. 61... 2.15	11 1/2" No. 61... 2.15	
	11 1/2" No. 62... 2.20	11 1/2" No. 62... 2.20	11 1/2" No. 62... 2.20	11 1/2" No. 62... 2.20	
	11 1/2" No. 63... 2.25	11 1/2" No. 63... 2.25	11 1/2" No. 63... 2.25	11 1/2" No. 63... 2.25	
	11 1/2" No. 64... 2.30	11 1/2" No. 64... 2.30	11 1/2" No. 64... 2.30	11 1/2" No. 64... 2.30	
	11 1/2" No. 65... 2.35	11 1/2" No. 65... 2.35	11 1/2" No. 65... 2.35	11 1/2" No. 65... 2.35	
	11 1/2" No. 66... 2.40	11 1/2" No. 66... 2.40	11 1/2" No. 66... 2.40	11 1/2" No. 66... 2.40	
	11 1/2" No. 67... 2.45	11 1/2" No. 67... 2.45	11 1/2" No. 67... 2.45	11 1/2" No. 67... 2.45	
	11 1/2" No. 68... 2.50	11 1/2" No. 68... 2.50	11 1/2" No. 68... 2.50	11 1/2" No. 68... 2.50	
	11 1/2" No. 69... 2.55	11 1/2" No. 69... 2.55	11 1/2" No. 69... 2.55	11 1/2" No. 69... 2.55	
	11 1/2" No. 70... 2.60	11 1/2" No. 70... 2.60	11 1/2" No. 70... 2.60	11 1/2" No. 70... 2.60	
	11 1/2" No. 71... 2.65	11 1/2" No. 71... 2.65	11 1/2" No. 71... 2.65	11 1/2" No. 71... 2.65	
	11 1/2" No. 72... 2.70	11 1/2" No. 72... 2.70	11 1/2" No. 72... 2.70	11 1/2" No. 72... 2.70	
	11 1/2" No. 73... 2.75	11 1/2" No. 73... 2.75	11 1/2" No. 73... 2.75	11 1/2" No. 73... 2.75	
	11 1/2" No. 74... 2.80	11 1/2" No. 74... 2.80	11 1/2" No. 74... 2.80	11 1/2" No. 74... 2.80	
	11 1/2" No. 75... 2.85	11 1/2" No. 75... 2.85	11 1/2" No. 75... 2.85	11 1/2" No. 75... 2.85	
	11 1/2" No. 76... 2.90	11 1/2" No. 76... 2.90	11 1/2" No. 76... 2.90	11 1/2" No. 76... 2.90	
	11 1/2" No. 77... 2.95	11 1/2" No. 77... 2.95	11 1/2" No. 77... 2.95	11 1/2" No. 77... 2.95	
	11 1/2" No. 78... 3.00	11 1/2" No. 78... 3.00	11 1/2" No. 78... 3.00	11 1/2" No. 78... 3.00	
	11 1/2" No. 79... 3.05	11 1/2" No. 79... 3.05	11 1/2" No. 79... 3.05	11 1/2" No. 79... 3.05	
	11 1/2" No. 80... 3.10	11 1/2" No. 80... 3.10	11 1/2" No. 80... 3.10	11 1/2" No. 80... 3.10	
	11 1/2" No. 81... 3.15	11 1/2" No. 81... 3.15	11 1/2" No. 81... 3.15	11 1/2" No. 81... 3.15	
	11 1/2" No. 82... 3.20	11 1/2" No. 82... 3.20	11 1/2" No. 82... 3.20	11 1/2" No. 82... 3.20	
	11 1/2" No. 83... 3.25	11 1/2" No. 83... 3.25	11 1/2" No. 83... 3.25	11 1/2" No. 83... 3.25	
	11 1/2" No. 84... 3.30	11 1/2" No. 84... 3.30	11 1/2" No. 84... 3.30	11 1/2" No. 84... 3.30	
	11 1/2" No. 85... 3.35	11 1/2" No. 85... 3.35	11 1/2" No. 85... 3.35	11 1/2" No. 85... 3.35	
	11 1/2" No. 86... 3.40	11 1/2" No. 86... 3.40	11 1/2" No. 86... 3.40	11 1/2" No. 86... 3.40	
	11 1/2" No. 87... 3.45	11 1/2" No. 87... 3.45	11 1/2" No. 87... 3.45	11 1/2" No. 87... 3.45	
	11 1/2" No. 88... 3.50	11 1/2" No. 88... 3.50	11 1/2" No. 88... 3.50	11 1/2" No. 88... 3.50	
	11 1/2" No. 89... 3.55	11 1/2" No. 89... 3.55	11 1/2" No. 89... 3.55	11 1/2" No. 89... 3.55	
	11 1/2" No. 90... 3.60	11 1/2" No. 90... 3.60	11 1/2" No. 90... 3.60	11 1/2" No. 90... 3.60	
	11 1/2" No. 91... 3.65	11 1/2" No. 91... 3.65	11 1/2" No. 91... 3.65	11 1/2" No. 91... 3.65	
	11 1/2" No. 92... 3.70	11 1/2" No. 92... 3.70	11 1/2" No. 92... 3.70	11 1/2" No. 92... 3.70	
	11 1/2" No. 93... 3.75	11 1/2" No. 93... 3.75	11 1/2" No. 93... 3.75	11 1/2" No. 93... 3.75	
	11 1/2" No. 94... 3.80	11 1/2" No. 94... 3.80	11 1/2" No. 94... 3.80	11 1/2" No. 94... 3.80	
	11 1/2" No. 95... 3.85	11 1/2" No. 95... 3.85	11 1/2" No. 95... 3.85	11 1/2" No. 95... 3.85	
	11 1/2" No. 96... 3.90	11 1/2" No. 96... 3.90	11 1/2" No. 96... 3.90	11 1/2" No. 96... 3.90	
	11 1/2" No. 97... 3.95	11 1/2" No. 97... 3.95	11 1/2" No. 97... 3.95	11 1/2" No. 97... 3.95	
	11 1/2" No. 98... 4.00	11 1/2" No. 98... 4.00	11 1/2" No. 98... 4.00	11 1/2" No. 98... 4.00	
	11 1/2" No. 99... 4.05	11 1/2" No. 99... 4.05	11 1/2" No. 99... 4.05	11 1/2" No. 99... 4.05	
	11 1/2" No. 100... 4.10	11 1/2" No. 100... 4.10	11 1/2" No. 100... 4.10	11 1/2" No. 100... 4.10	

Best and airplane fittings—parts also largest complete line of O-HO-DO gauge Railroad parts available anywhere.
Send for your catalog and assortment today!
Catalog only 5c to cover mailing.
SELLEY MFG. CO., Dept. 382, 1377 GATES AVE., BROOKLYN 31, N. Y.



"IDEAL'S"

'HO' WRECKING CRANE

- Here's a model you'll be proud to have on your layout.
 - Amazingly easy to put this bit together—large sized plan has complete instructions with 17 DETAILED DRAWINGS.
 - Of wood and heavy cardboard printed with rivet embossed sides.
 - All wood parts are cut to size.
 - The train is weighted and balanced for actual use.
- KIT COMPLETE WITH COMPLETELY ASSEMBLED BRASS WHEEL TRUCKS**
\$2.00 at your dealers—By mail Add 15c for postage

Send for our Catalogue, 10c

IDEAL MODELS
25-24 WEST 10TH STREET, NEW YORK 11, N. Y.

Recognized as the Best Buy of the Year!

New

SAIL CHAMP 36

PLASTIC FITTINGS

22" High 17" Long

Build it NOW. SAIL it in the Summer . . . The SAIL CHAMP! Once again the famous "Bulkhead Construction" is used. It makes the SAIL CHAMP sail like a real boat! No cut-out work . . . as all parts are prefabricated for "assembly line" construction. Another C. P. & E. D. Burgess Design, SAIL CHAMP is manufactured with permission of Douglas Fir Plywood Ass'n . . . another ALL-STAR exclusive.

Makers of the Cape Cod and the Grand Banks

ALL STAR MODEL & MFG. CO.
2003 Lincoln Chicago 14



ONLY \$1
By Mail
\$1.25

ALSO *A CHAMPION* NEW

Designed by Bev. Smith



ANNOUNCING
SLICK CHICK

... and FAST TOO.

The first free flight model designed especially for the ARDEN .099 power pack and engine, and also adaptable for .099 engine with conventional ignition installation. Features unique construction with many pre-cut and pre-formed parts, lowering construction time to less than ten hours. Slick Chick has proven flight ability. Available at your dealers

COMPLETE KIT \$4.95

POWER ICE BOAT!

MODEL

- ICE BOAT—Speeds faster than race cars on wooden tracks and gym floors.
- ICE BOAT—Not only limited to ice and snow but will—speed on grass, sand and any level ground with the use of wide skis.
- ICE BOAT—Is also adaptable for pontoons, can be converted to boat racing craft.
- ICE BOAT—Uses any A, B, or C engine with ample room for coil, condenser and batteries. Overall length approximately 20".

At your dealer COMPLETE KIT \$4.95



CHALLENGER

but if it goes below this you will have to face a bit off the top of the crankcase neck to get it in line. When the cylinder is tightened into place the exhaust ports should be on each side of the engine. Due to the fact that a quarter turn of the cylinder moves it only .007 vertically, a few thousandths more or less will bring the ports around to the right spot. If the piston stops above the exhaust ports, raise the cylinder by putting a washer between it and the neck of the crankcase.

If the various parts of the motor have been accurately made the compression ratio should come out to about 5-1/2 to 1, which is about midway between high and low. The chucking stud may be cut off just as soon as the engine turns over smoothly and feels as though it is going to have good compression; however, it is better to be cautious and keep it on until the engine is ready to be installed in an airplane. It is very handy when the engine is being broken in as no mounts are needed—just clamp the stud in a vise and the engine is ready to run.

Install a V3 sparkplug and use at 2 to 1 mixture of white gas and No. 70 oil while the engine is getting its sea legs; and do not run at full advance as the top of the piston expands more than the cylinder barrel and might seize up. This will do no serious damage to the engine but it may loosen the aluminum socket a little, a fault which shows up in a sudden loss of compression. Should this occur, all you have to do is re-close it with the socket closing tool.

Mounting the engine should be done radially, with metal brackets fastened to the screws holding the gas tank in place. Alternately, angles can be fastened to the sides of the case for normal beam-style mounting.

As with any engine, its efficiency and even its length of service depend entirely upon the care with which it is broken in. Run it slowly, use only the best oil and gas, and disassemble and clean the engine thoroughly after each half hour or so of running until it is thoroughly loosened up and ready for real work.

(Needless to say, we will be very pleased to hear from readers who have built this engine, or to help those who have run into difficulties. If there is sufficient interest in material of this sort, more will be presented in this magazine in the future.—Editor.)

Flash News

(Continued from page 6)

ed in the nose. The XF2R-1 is powered by a General Electric TG-100 gas turbine driving a four-bladed propeller encased in a long, sharknosed spinner. The propeller is of the "square tip" design. The new power unit increases length of the Fireball by four feet, and this additional area forward of the center of gravity has required installation of a large dorsal fin forward of the rudder to provide the required lateral area. A feature of the turboprop unit is the fact that after driving the propeller, about 25% of the available power remains for jet thrust through exits on either side of the nose. The tail unit remains a General Electric I-16 unit as in the FR-1. Advantage of the turboprop unit lies in retention of the propeller with its fast acceleration (for takeoff and rapid climb) while making available the "constant thrust" characteristic of the gas turbine. The XF2R-1, even more than the FR-1, is thus an "all altitude" fighter plane with substantially the same amount of power available at its ceiling as is available at

sea level. As in the case of the XF15C-1, the XF2R-1 is not slated for quantity production at present but both will be used for intensive development work as guinea pigs for future fighters.

IT MAY NOW be revealed that the potent North American XB-45 jet bomber has been completed for several months, but delays in delivery of the engines have forced temporary cessation in work on the craft. It is a midwing bomber with a single rudder and is powered by four General Electric TG-180 axial flow turbojet engines mounted in pairs in nacelles in the wing. The bomber is said to be in the 600 mph class.

ONE OF THE strangest aircraft ever built in America is the new Boeing L-15 two place liaison airplane under development for AAF. In general appearance it looks as if an engineer took the gondola from a Goodyear blimp, turned it around, added wings and an upside-down twin tail assembly on a boom and called it an airplane! However, the L-15 is a carefully designed answer to the liaison aircraft problem to which the wartime *Grasshoppers* supplied only a partial answer. The strange design will fly at less than 50 mph, take off and clear a 50 ft. obstacle in 600 ft., and land in less than 250 ft. It is powered by a Lycoming 125 hp engine mounted tractor-style in the nose. The observer is located in a glass enclosure allowing nearly complete vision throughout a full sphere of observation. The L-15 has been designed for versatility: it can be towed as a glider to the operating area, thereby conserving fuel on the way out; it can be equipped with skis and a special fitting can be attached to enable it to operate from an overhead cable in the jungle. Another special feature is the fact that it can be quickly disassembled and loaded into standard 2-1/2 ton Army truck!

MANY SIGNS point to a projected round-the-world record-breaking attempt by Republic *Rainbow* transport this summer. Company and Army engineers are said to have estimated the total time as only 46 hours including stops in Paris, Karachi, Tokyo and Fairbanks. There is little doubt that the 400 mph craft can do the job under proper conditions, but there will be many days of waiting, checking and predicting to choose that one particular takeoff day when the weather is "just right!"

Flyabout

(Continued from page 23)

cylinder head can be made by wrapping fine wire on a nail. The twin-ignition sparkplugs on the forward side of each cylinder head are small pieces of balsa. The cylinder units are cemented on the nose block as shown on drawings at 120 degrees apart. Carve the instrument panel block from soft balsa and cement in position as the next step.

To complete the fuselage, cut from 1/32" sheet balsa the six stringers required which extend along the fuselage sides, cementing them in their proper locations as shown on plate 1. Also install the piano wire tail skid of No. 15 wire on the fuselage tailpost, making sure of good adhesion.

WING—The wing is relatively simple to build. Cut the 18 required ribs from 1/32" sheet balsa. Notch each one for the

SOL—What's the best way to hatch bigger profits from the model business?

LOU—That's easy. Just keep on top of the situation by featuring **KRAMER** items.



We are especially proud of our December record that showed over 92% of our customers' orders were serviced promptly and immediately. For our dealers, this promptness spells P-R-O-F-I-T-S!

We are first to SHOW, STOCK and SHIP new items.

Dealers, Write Us Your Needs

KRAMER BROTHERS

MODEL DISTRIBUTORS

125-27-29-31 Colvin St. • Baltimore 2, Md.

Coming! . . .

ANDERSON
Microengines

ANDERSON
Spitfire

The Mel Anderson Mfg. Co. announces the production of the Anderson **SPITFIRE**

The outstanding 10cc. (.61 cubic inch) semi-race engine for U-control and free flight, designed by Mel Anderson, former designer and production engineer of the Famous Super-Cyclone

Mel Anderson pledges to the model industry the finest quality engines in model aircraft history

Watch for the Anderson Spitfire

MEL ANDERSON MFG. CO., INC.

1819 THIRD AVE., LOS ANGELES 6, CALIF.

LIST of ENLARGED WYLAM MASTERPLANS

available in size 14x20 inches per page — which is *twice* the size published in MODEL AIRPLANE NEWS.

35c per enlarged page

Please order by number

- 1-4a F6F-3
- 1-4b Wright Bros. FLIER
- 1-4c P-40D Gen.Arr.
- 1-4d P-40D Layout
- 2-4 B-24H
- 3-4 OB-01 Mitsubishi BETTY
- 4-4a A-22 MARYLAND Gen.Arr.
- 4-4b A-22 MARYLAND Layout
- 4-4c PBV-5a CATALINA
- 6-4 Avro Lancaster I
- 7-4 A-25 HELLDIVER
- 8-4b B-17G FLYING FORTRESS Gen.Arr.
- 8-4c B-17G FLYING FORTRESS Layout
- 9-4a B-29 SUPER FORTRESS Gen.Arr.
- 9-4b B-29 SUPER FORTRESS Layout
- 10-4 P-61 BLACK WIDOW Gen.Arr.
- 11-4a B-26D MARAUDER Gen.Arr.
- 11-4b B-26D MARAUDER Layout
- 12-4a P-47D THUNDERBOLT Gen.Arr.
- 12-4b P-47D THUNDERBOLT Layout
- 12-4c SE-5A Gen. Arrangements
- 12-4d SE-5A Fuselage Details
- 12-4e SE-5A Layout
- 1-5 P-39A AIRCOMET Gen.Arr.
- 2-3 A-26 INVADER Gen.Arr.
- 3-5c P-63A KINGCOBRA Gen.Arr.
- 3-5d P-63A KING COBRA Layout
- 4-5a C-97 Boeing Gen.Arr.
- 4-5b C-97 Boeing Layout
- 5-5 XP-54 SWOOSIE GOOSE Gen.Arr.
- 6-5d XP-67 McDonnell Gen.Arr.
- 9-3a HISPANO-SUIZA Engine. Gen.Arr.&Instr.
- 9-5b HISPANO-SUIZA Details & Specif.
- 10-5a C-54 SKYMASTER Gen. Arr.
- 10-5b C-54 SKYMASTER Layout
- 11-5a F-2B BRISFIT Gen.Arr. Part 1
- 11-5b F-2B BRISFIT Gen.Arr. Part 2
- 11-5c Piper SKYCYCLE Gen.Arr.
- 12-5a F-2B BRISFIT Fuselage Details
- 12-5b F-2B BRISFIT Layout
- 1-6a DeH-4 Gen. Arrangements Part 1
- 1-6b DeH-4 Layout
- 2-6a DeH-4 Gen. Arrangements Part 2
- 2-6b DeH-4 Fusel. Scarff Ring Details
- 3-6a S-VII SPAD Gen. Arr.
- 3-6b S-VII SPAD Layout
- 4-6a S-VII SPAD Fuselage Details
- 4-6b VICKERS mach. gun Gen.Arr.
- 5-6a D-1 to D-2 ALBATROS Gen.Arr.
- 5-6b D-1 & D-2 ALBATROS Layout
- 6-6a D-3 & D-4 ALBATROS Gen.Arr.
- 6-6b D-1 to D-3 ALBATROS Wing Layout
- 7-6a S-XIII C.1 SPAD Gen. Arr.
- 7-6b S-XIII C.1 SPAD Layout
- 8-6a S-XIII C.1 SPAD Fusel. & Wing.Det.
- 8-6b LEWIS mach.gun.Gen.Arr.
- 9-6a D-5 & D-6 ALBATROS Gen.Arr.
- 9-6b D-5 & D-6 ALBATROS Layout
- 10-6a D-1 to D-6 ALBATROS Fusel. Interior Det.
- 10-6b D-1 to D-6 ALBATROS Fusel. Struct. Det.
- 11-6a S-XIA-2 SPAD Gen.Arr. Part 1
- 11-6b S-XIA-2 SPAD Layout
- 12-6a S-XIA-2 SPAD Gen.Arr. Part 2
- 12-6b S-XIA-2 SPAD Fusel. Details
- 1-7a D-4 SIEMANS SCHUKERT Gen.Arr.
- 1-7b D-4 SIEMANS SCHUKERT Layout
- 2-7a D-4 SIEMANS SCHUKERT Fusel. Det.
- 2-7b SIEMANS HALSEKE rotary motor Gen.Arr.
- 3-7a WRIGHT MODEL A. Gen.Arr.
- 3-7b WRIGHT MODEL B. Gen.Arr.

Send order and remittance (at 35c per enlarged page) to:

Plan Dept.

MODEL AIRPLANE NEWS

551 Fifth Ave.

New York 17, N. Y.

two main spars. The leading edge is a length of 1/8" x 1/4" stock, sanded to proper crosssection later. Instead of building the wing in one piece, each half is constructed separately, both being joined later with a cemented butt joint. Select good hard stock for the spars. The front one, in two sections of course, is 1/16" x 5/16" balsa. The rear spar is 1/16" x 3/16".

As will be noted, two false spars are included, each pair being the length of the ailerons. Cut the forward pair from 3/32" x 5/16" material, and the rear set from 3/32" x 3/16" balsa. The trailing edge is 1/16" x 3/16" stock; notch it for the ribs. To build a wing half, slide the necessary ribs on the spars in their approximate positions. Pin the two spars to the working surface followed by the trailing edge. Raise all three members on blocks the necessary distance from the workbench surface as required. The ribs are then placed in their correct locations and cemented.

At the fuselage end of each wing panel there are two spar sections between the first two ribs, each the depth of the airfoil section in their respective locations. Install these, then cementing the overhead window in place (.010" celluloid), following the contour of the ribs. Now cement the leading edge against the ribs, sanding it to section shown when dry. Next cut a pair of wingtips from 1/32" sheet balsa and install. Each aileron is installed with soft copper or iron wire as shown. Put 1/2" dihedral in each wing panel (at tip) by cutting the leading and trailing edges where indicated, after wing frame has become a one-piece unit. Use cement and reinforcing balsa blocks to securely fasten the material which has been partially cut through.

TAIL SURFACES—The empennage is of simple construction yet rugged in service. Fin and rudder spars are 1/16" x 3/32" balsa, while the ribs are merely 1/16" sq. strip balsa. All diagonal cross-bracing is of 1/32" sq. bamboo. To form the edges, use No. 18 aluminum wire, bent to correct outline with the fingers as it is worked around from one end to the other. Finally, connect the fin and rudder with the same hinge wire used for the ailerons.

The stabilizer is of the same general construction as the vertical empennage. It consists of 1/16" x 3/32" stock for all edges and spars. The ribs are also of 1/16" sq. balsa, and 1/32" sq. bamboo is again used for crossbracing. To complete it, connect the elevator to the horizontal stabilizer with the wire hinges.

LANDING GEAR—This unit is of bamboo construction. In building it, use 3/64" x 1/16" bamboo, sanded to approximate streamlined section. Where each strut is cemented to the fuselage, use cement freely to effect good unions. Proceed to cement the three struts together at the axle after the fuselage attachment. To complete it, make two axles from No. 15 piano wire as shown on plate 2. Where attached, they are to be bent in a "U" shape and then wrapped with thread and cemented. The 3/4" diameter wheels, of the air-wheel type, can be purchased from any model supply house, or turned from balsa if desired. Hold wheels on with a small drop of solder.

PROPELLER & MISC. STRUTS—Carve the propeller from medium-hard balsa. First blank it out as shown on plate 1. After it has been carefully sanded to a good finish, upon completion of the carving of the blades, drill a hole through the hub to accommodate the No. 15 piano



Completing your equipment with a SPINIT brings added flying pleasure. Features include fingertip automatic safety release, rubber cushioned drive, steel-spring powered. The SPINIT is just what you need to make model flying more fun.

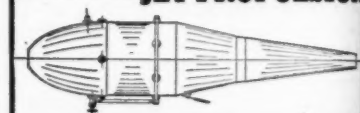


IF IT WILL RUN, A SPINIT WILL START IT
More fun, more thrills—with a SPINIT. Standard for A & B motors. Heavy for C motors. Two blade models, short or long drive, \$4.00; 3 blade models, \$6.00. Write for folder. Order from dealer or direct.

STREED ELECTRIC CO.

1315 Harmon Place, Dept. M
Minneapolis 3, Minnesota

JET PROPULSION



GAS TURBINE Model Engine

* * Be one of the first to build a real Turbo-Jet Model Engine. Single-stage centrifugal compressor and turbine. A real engine, easily made with ordinary home workshop equipment. Complete plans for construction...design formulas and curves for checking performance and testing.

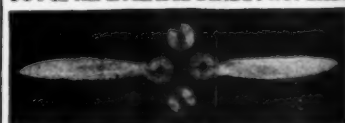
\$2.00
POSTPAID

THE ROTOJET CO. Department 12

BOX 757 • LOS ANGELES 25 • CALIFORNIA

5 HELPFUL BOOKS FOR MODELERS (See page 60)

JOYCE REPLACEABLE BLADE PROPELLER



A JOYCE PRODUCT

Scientific design gives utmost thrust per horsepower expended. Expertly molded in red, ivory or black plastic, Joyce props have true pitch and perfect aerodynamic balance. Each package contains three replaceable blades (equal to 2 propellers), 2 aluminum driving discs and 1 aluminum bushing:

8"prop \$1 10"prop \$1.30 11"prop \$1.45
Individual blades are replaceable at low cost:
8"blade 30c 10"blade 40c 11"blade 45c

Hubs 25c per pair Bushings 10c each
Buy from your dealer or order direct, giving dealer's name.

JOYCE PRODUCTS, INC.

BOX 364, ROCKVILLE CENTRE, N. Y.

*Horsepower absorption curves available on request.

wire shaft, which is inserted in the propeller later.

The main wing struts are made from 1/16" x 1/8" hard balsa, each being sanded to a streamlined cross-section. The small inner brace struts between the main struts and wing are made from 1/32" x 1/16" bamboo. Notice that a diagonal drag strut of the same size bamboo is included in the group (see dotted line across side window of cabin—side view of fuselage on plate 1). The brace struts for each side of the stabilizer are also made from 1/32" x 1/16" bamboo. All struts, now ready to install, are laid aside until covering is completed.

COVERING & ASSEMBLY—Colored tissue should be used to cover the model. Begin with the fuselage, which should first have installed the side cabin windows, cut from .010" sheet celluloid. It is suggested that the fuselage be a dark color, using a lighter contrasting color for wing and empennage. Proceed to cover the wing and tail surfaces in the usual manner. Now give the paper its primary tautness by spraying with water, following with a light coat of clear dope.

The assembly may now be started. First paint the interior structure of the cabin, with a selected colored dope, including the instrument panel block. Also paint the engine at this time, giving it two coats of glossy black dope. Cement the wing in its correct position on the fuselage. Cut five lengths of No. 12 piano wire which forms the windshield frame between nose upper cowl and wing leading edge. One is in the center, while the remaining four are grouped in two sets as shown. Make and install the dummy balsa gas tank cap on its 1/32" sheet balsa base. Determine the windshield template, using paper. After getting it to correct outline (flat development), make the windshield itself from .010" sheet celluloid. To install it, first cement it to the center brace, using pins at upper cowl and wing leading edge temporarily, and work each half around to the fuselage sides, cementing well and using pins until dry.

Proceed with the assembly by next installing all the wing struts previously made. Cement the horizontal stabilizer in position in the slot provided. The stabilizer struts (one is on each underside of the stab.) can now be cemented in position. The vertical fin and rudder assembly are now cemented on top of fuselage, taking care that it lines up correctly with the horizontal stabilizer. The thread bracing on the tail, also the dummy elevator and rudder control cables, should now be cemented in place. Use gray thread for these. Each should be strung as taut as possible, being pinned in place under tension until cement is dry.

Next paint the wing and tail struts with a properly colored dope to match your paper color scheme. The propeller shaft with hook bent in it is now slid forward from rear side of the nose block through the block and propeller. Insert two small brass washers between the two in this operation. Bend the shaft over and sink it in the propeller hub, using cement.

BALANCING AND FLYING—First glide the model after ascertaining that it is in approximate balance. Bend the elevators down slightly to compensate for a slight stall. Should it require more nose weight than the elevators can counteract for, cement a small piece of solder on rear side of the nose block. When gliding properly, install 2 to 4 strands of 1/8" flat rubber, giving the propeller a few turns only for a trial flight. If satisfactory, proceed to wind it to capacity.

DURO-MATIC

McCOY

SUPER

"60"



"49"



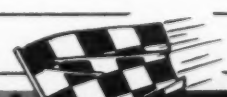
Red Head

Red Head, Jr.

A powerful performer in all events, the McCoy RED HEAD is precision built for record-making racing on land, water and in the air..\$35

Sensational for U-control racing

- The McCoy RED HEAD, JR. is the husky "little brother" of the RED HEAD "60," built to the same standards of quality and design. For U-control, free flight and precision flying.....\$25



OTHER GREAT

Checkered Flag PERFORMERS

Hot Rod Prototype of California's famous roadster racing car.

McCoy World's champion racing car-official time: 118.73 mph.

Invader A prototype with speed to match its racing lines.

Each\$42.50

DURO-MATIC

PRODUCTS COMPANY

HOLLYWOOD 38, CALIFORNIA

NOW The Model That BROKE the World's RECORD TWICE IN ONE DAY!

KORDA'S POWERHOUSE BY BERKELEY

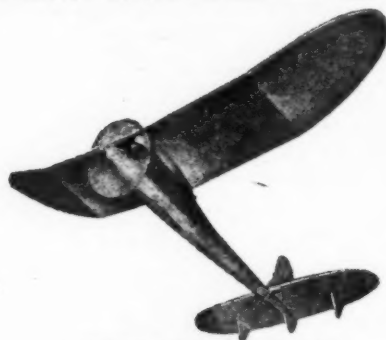


Note the clean functional lines of the "Powerhouse". The clean nose accentuated by the massive Berkeley Spinner. The simple retracting landing gear. The efficient polyhedral wing. The rugged constructed fuselage. The entire model completely structurally engineered.

Powered by a stock DeLong "30" Engine, Dick Korda's "Powerhouse" turned in a sensational 35 min., 44 sec. flight, followed by a 21 min., 5 sec. out-of-sight second flight at the Michigan State Meet, setting new official records for single flight and for 3-flight average.

All over the country, Dick Korda has demonstrated and placed in contests with his sensational powerhouse, flying and winning match contests against all comers.

The "Powerhouse" introduces a new technique in free-flight flying. It uses a small, high-pitch prop. It takes off at terrific speed and climbs at its most efficient angle, rather than hanging on its prop like old-fashioned contest designs.



KORDA "B" POWERHOUSE

56-inch WINGSPAN—FOR .29 to .49 ENGINES
511 sq. in.—WING AREA—WEIGHS 36 oz.

This Berkeley Kit is the finest, most complete gas model construction kit ever produced. Full size detailed plans with step-by-step instructions; die-cut plywood parts; accurate cut and selected wood; balsa parts printed out; Silkscreen covering; Hardware; Wheel; Cement; Ready-made retracting landing gear parts; and featuring:

Berkeley Aluminum Spinner & Engine Adaptor

Sensationally **\$4.95**
low-priced at

DICK KORDA

International Wakefield Rubber Model Champion, National Towline Glider Champion, and Class "B" GAS Model Record Holder. A respected designer and a real contest sport has joined Berkeley's staff of championship free-lance designers.



The "POWERHOUSE" joins this great family of Berkeley FREE FLIGHT GAS MODELS

BUCCANEER "B" Special



54-inch Wingspan For .23 to .35 engines

America's most popular cabin gas model. Since 1935, Buccaneers have been the favorite for contest, sport, and radio control flying.

Complete Kit \$3.95

BUCCANEER "36". For .099 engines..... 1.50

BUCCANEER "48". For .15 to .23 engines... 3.50

BUCCANEER—Standard. For .35 to .49 engines..... 5.95

BUCCANEER "C" Special. For .49 to .65 engines..... 6.95

SUPER BUCCANEER. For .59 to 1.20 engines..... 8.50

CUSTOM—CAVALIER "108"



9-ft. Wingspan. Monocoque fuselage construction. High performance cantilever wing. Tricycle landing gear. For the greatest thrill in free-flight flying. For Radio control and experimental work.

Complete Kit (less wheels) \$15.00

CUSTOM—CAVALIER—"TWIN."

For two .49 to .60 engines..... \$20.00

CAVALIER—"60". For .23 to .30 engines..... 5.95

BRIGADIER—"38"



38" Wingspan. For .099 engines.

The easy-to-build gas model that turns in contest performance for the beginners. Kit is complete, including dural hub sponge wheels..... \$1.95

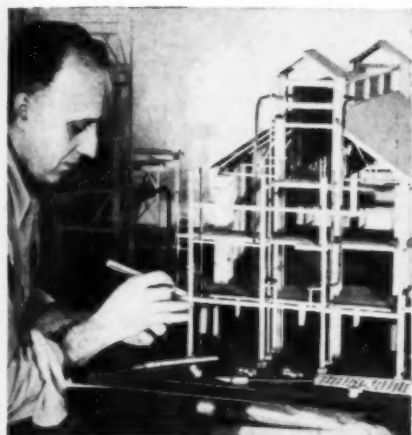
BRIGADIER—"58". For .19 to .35 engines..... \$2.95

BERKELEY MODELS INC.

140 GREENPOINT AVE. • BROOKLYN 22, N. Y.

New X-acto Tools

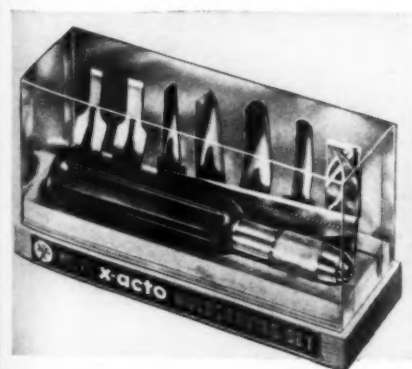
Scientifically designed to fit those small, exacting jobs



Makes Super-Furnace With Super-Knife

Wherever there's oil in the world, you'll find refineries designed by The M. W. Kellogg Company of New York. Here, Edmund Serafin, of the Kellogg Model Department, works on a model of a cracking furnace embodying new developments in engineering and design.

Naturally, Mr. Serafin is using the knife that embodies the newest developments in model-building tools... X-acto! He likes its scalpel-sharpness, its wide variety of blades. But especially he likes the way this long-handled knife reaches 'way inside the model to otherwise inaccessible parts.



New No. 77 X-acto Woodcarving Set.

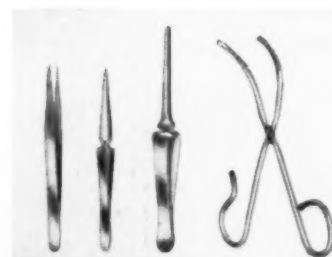
Perfect tool for wood, plastics, linoleum, etc. Includes 6 different chisel and gouge blades, 4 assorted regular blades, 2 3-inch blades, 1 handle designed to take all blades. Complete with hardwood block, transparent cover, \$3. Other Knives, Tools, Chests, 25c to \$49.50. (Prices slightly higher in Canada.)



No. 50 X-ACTO HAMMER SET—6 heads: 2 ball; 3 flat (steel, brass, plastic); 1 tinner's hammer with angle-locking set screw. Set, \$1.50.



"BEGINNERS' LUCK"—No. 81 X-acto Modelbuilder's Basic Kit: No. 2 Knife; 5 regular, 2 3" blades; planer; sander. Complete, \$2.50.



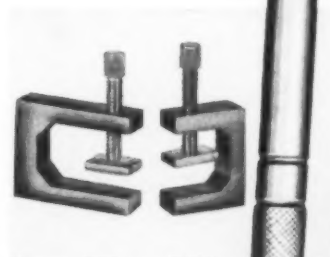
TWEEZERS—Steel, with plated finish. No. 36, plain, 35c. No. 38, cross-action self-locking, pointed, 50c. No. 37, cross-action self-locking, blunt, 45c. No. 39, cross-action, 60c.



PLIERS—Case hardened. For wire-forming, etc. No. 58, combination round and flat, \$1.85. No. 56, flat nose, \$1.75. No. 57, point nose, \$1.75.



No. 47 HAND DRILL—Double pinion action, spring steel chuck. Takes drills up to 3/16". \$2.75.



C-CLAMPS—Magnesium, high rigidity, steel screw, aluminum locking plate. No. 51, 30c. Nos. 52 & 53, 40c. No. 54, 50c.

X-acto

KNIVES & TOOLS

At hobby, gift and hardware shops

X-acto Crescent Products Co., Inc.
440 Fourth Ave.,
New York 16, N. Y.
In Canada: Handicraft Tools, Ltd.,
Hermant Bldg.,
Toronto.
*Reg. U.S. Pat. Off.

5

IMPORTANT IMPROVEMENTS and no increase in price!

O & R 23 \$16⁵⁰

**Standard Aircraft Type
Mounting** (Convertible To
Beam Mounting If Desired)

**Exhaust Port Area
Increased For More
Efficient Scavenging**

**Additional Crankcase
Fins For Greater
Volumetric Efficiency**

**Intake Tube Boss
Enlarged For
Additional Strength**

**New High Pressure
Aluminum Die-Casting
For Greater Strength**

How to Install BEAM TYPE MOUNTING IF DESIRED

The new "23's" are designed for modern radial type mounting and the old style mounting lugs for beam mounting are eliminated. However, for modelers who prefer beam mounting, an accessory mount is available for 50c.

2. Slide beam-type mount between tank and cylinder and move into place.

3. Replace crankcase screws and tighten...
Note: It is not necessary to remove gas tank to install mounting.

1. Remove two top crankcase screws.

Rumored for many weeks has been the introduction of an improved O & R 23 for 1947. These new engines are now available at your dealer's, featuring famous "23" design, lapped piston and cylinder, one-piece microbalanced crankshaft, ball-bearing thrust bearing, and enclosed timer plus the features noted above. Add a new "23" to your model equipment and keep ahead in '47.

NEW O & R 23 ROTARY VALVE Conversion Accessory for those who want this type of gas mixture admission. Consists of rotary valve front section and rotary valve crankshaft. Check your dealer for availability.

PERFORMANCE PRICE
THINK TWICE GET AN

Ohlsson & Rice

STANDARD OF THE MODEL WORLD

Emery at Grande Vista, Los Angeles 23, California

